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PROLEGOMENA TO THE STUDY OF BIOMORPHIC MODERNISM:

BIOCENTRISM, LÁSZLÓ MOHOLY-NAGY'S "NEW VISION"

AND ERNŐ KÁLLAI'S *BIROMANTIK*

by

OLIVER ÁRPÁD ISTVÁN BOTAR

A thesis submitted in conformity with the requirements
for the degree of Doctor of Philosophy
Graduate Department of the History of Art
University of Toronto

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ABSTRACT

Prolegomena to the Study of Biomorphic Modernism: Biocentrism,
László Moholy-Nagy's "New Vision"
and Ernő Kállai's *Bioromantik*
Doctor of Philosophy, 1998
Oliver Árpád István Botar
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Focusing on Weimar Germany, I ground the study of biomorphic Modernism in Ernő Kállai's 1932 identification of a trend he termed *Bioromantik*. Kállai wrote from a *biocentric* position, an amalgam of Nature Romanticism and biologism espoused by Nietzsche, Ernst Haeckel, Ludwig Klages, Oswald Spengler, Raoul Francé and Hans Prinzhorn in the early 20th century, here established as a politically-charged category of intellectual history. Kállai characterized *Bioromantik* as art, the imagery, forms or themes of which express Monist, Neo-Vitalist, *lebensphilosophisch* and Organicist, i.e. *biocentric* concepts such as the life-force, creative/destructive aspects of nature, and our unity with it. The work of artists he cited (Arp, Klee, Moore, Kandinsky, Ernst, etc.) is biomorphically Modernist in style. Kállai's conception derives from his realization of the similarity between biomorphically artistic and scientific photography, here termed the "naturamorphic analogy," a *topos* traceable to Kandinsky's pre-war writing. Probably inspired by Walter Benjamin's review of Karl Blossfeldt's photographs, Kállai's epiphany occurred in the Moholy-Nagy-curated "Raum-1" of the 1929 *Film und Foto* show in Stuttgart; in effect a three-dimensional statement of his "New Vision" that aestheticized scientific photography, and that -- like Moholy's entire pedagogical project -- I show to be rooted in biocentrism. Thus, the profound effect biocentric thinkers had on the milieu Moholy emerged from is discussed: The *fin-de-siècle* Haeckelian tradition of normative aestheticized scien-

tific imagery is shown to underlie New Vision; the biocentric wing of the *Jugendbewegung* is revealed as a source of Moholy's biocentric pedagogy; inspired by Francé, "Biocentric Constructivism" is identified as a discourse engaged in by Mies, Moholy, Lissitzky, Hausmann and Meyer; the Bauhaus, with attention to Gropius, Klee, Kandinsky, Schlemmer and Meyer, is recast as a locus of biocentric ideas. Like others, Kállai proposed a "psychobiological" explanation for the naturamorphic analogy: the artists' identity with nature and their consequent intuitive imaging of its unseen aspects also revealed by science. I show how the aestheticization of scientific images effected by New Vision enabled Modernist artists and critics to be exposed to such imagery -- an historical alternative to the essentialist explanation that constitutes a basis for research on biomorphic Modernist art.

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TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	vii
LIST OF ILLUSTRATIONS	x
INTRODUCTION: Plumbing the Depths	1
Notes	27
CHAPTER ONE: Biomorphic Modernism: Historiography, Terminology, Literature	41
1. Forms	41
2. Frames	44
a. Read, Worringer, and the "Organic"	45
b. Unit 1	47
c. Grigson's "Biomorph"	51
d. Haddon's "Biomorph"	53
e. Barr's "Biomorph"	55
f. Organic/Biomorphic; Curvilinear/Crystalline	58
g. MOMA: Form over Content	62
h. Kállai and <i>Bioromantik</i>	65
i. Giedion-Welcker's "Organic Elementarism"	69
j. Dorner's "Expressive Curve"	70
k. Contextualism and its Limits	72
l. From the Dialectic to the Frame	74
m. Movement, Trend or Style?	77
n. Diachronic and Synchronic	81
3. Literature Review	81
a. "The repression of Neo-Romance has a history"	81
b. Antiformalism	87
i. Europe	88
ii. A Pregnant Historical Moment	90
iii. Outsiders	94
iv. <i>Kunstgeschichte als Geistesgeschichte</i>	100
v. Biomorphic Modernism	102
c. Photographic and Design History	110
i. "Poetics of Bourgeois Wonder"	110
ii. Germany	111
d. Literary Studies and the History of Science	117
e. Post-Modernism and the Organic	120
Notes	122

CHAPTER TWO: Biocentrism	163
1. Framing Intellectual History	165
a. <i>Fin-de-siècle</i> Neo-Romanticism	166
i. Antimodernity and <i>Kulturkritik</i>	167
ii. Biologism: Raoul Heinrich Francé	175
2. From Nature-Centric Neo-Romanticism to Biocentrism	185
a. <i>Lebensphilosophie</i>	186
b. Neo-Vitalism	187
c. The <i>Monistenbund</i>	190
d. New Biology: Neo-Lamarckism, Organicism, Holism	195
e. <i>Biozentrik</i>	205
3. Politics	210
a. The German Cultural Sphere	210
b. Bramwell's "Ecologism": Problematizing the Taxonomy	216
c. Interwar <i>Biozentrik</i>	226
i. Mies' Library	227
ii. Klages and von Uexküll	230
iii. Francé	233
Notes	247
CHAPTER THREE: Biocentrism and Modernism in Early Weimar Germany: The Context and Roots of Moholy-Nagy's Pedagogy	297
1. <i>Biozentrik, Jugendbewegung, Weimar Avant-garde</i>	299
a. Youth Movement and Biocentrism	299
b. Youth Movement and Avant-Garde	301
i. Nietzsche and Marc	301
ii. Haeckel	303
iii. Hausmann and Berlin Dada	303
iv. <i>Gläserne Kette</i>	304
v. Behne	305
2. Moholy-Nagy, Lebensreform, Biocentrism	307
a. The Hungarian Background	309
b. <i>Freideutsche Jugend</i>	311
c. Lucia Schulz and Ernst Fuhrmann	314
d. "A tongue of fire to expound his happiness": The Communes and Moholy's Biocentric Pedagogy	319
3. <i>Biozentrik</i> at the Gropius Bauhaus	326
a. Gropius	329
b. Itten	333
c. Schlemmer	335
d. Klee and Kandinsky	336
Notes	350

CHAPTER FOUR: Raoul Francé, the Biocentric Constructivist Discourse, and Moholy-Nagy's New Vision	395
1. "Biocentric Constructivism": Towards a Synthesis of the "Machine Analogy" and the "Biological Analogy"	396
a. International Constructivism in Germany	398
b. Paul Westheim's Intervention: Enter Francé	406
c. Of Spiral and Shells	412
2. Francé and the Biocentric Constructivist Discourse	417
a. Hausmann's Anarchist Biocentrism	419
b. G and Mies	422
c. Lissitzky's "Nasci"	424
d. Hannes Meyer and Switzerland	427
e. Ebeling and the Bauhaus	430
f. The Analogous Projects of Moholy-Nagy and Francé	433
g. The Naturamorphic Analogy as Fashion	446
h. Ambivalence	447
i. Attraction	452
Notes	456
CHAPTER FIVE: Moholy-Nagy's New Vision, Aestheticized Scientific Self-Imaging and Kállai's Bioromantic Epiphany	494
1. Introduction	497
2. Scientific and Art Photography in Combined Public Display	505
a. Heritage	505
b. Early Weimar Years	507
c. Moholy-Nagy and <i>Das Deutsche Lichtbild</i>	514
d. The First Exhibitions Based on "New Vision"	520
e. <i>Film und Foto</i> and the "New Vision"	533
3. Kállai from <i>Technoromantik</i> to <i>Bioromantik</i>	547
a. A Gradual Disillusion	548
b. Kállai at The Hannes Meyer Bauhaus	552
c. Kállai and the Naturamorphic Analogy	569
i. Blossfeldt / Benjamin	569
ii. Epiphany	572
d. <i>Bioromantik</i>	574
Notes	582
THEMATIC BIBLIOGRAPHY	620
ILLUSTRATIONS	677
VITA	

LIST OF ILLUSTRATIONS

Unless otherwise indicated, source publications for illustrations are in the collection of Oliver A. I. Botar.

Introduction-1. Karel Teige (?), layout from *Red 1*, no. 6 (1928): 214-15. With captions by Teige and film stills from *Wunder des Blauen Golfes* (UFA, 1928). Photograph: Robarts Library, University of Toronto.

1-1. Alfred H. Barr, Jr., Flow chart showing the development of modern art from his *Cubism and Abstract Art* (New York: The Museum of Modern Art, 1936), Frontispiece. After the facsimile edition published by the MOMA in 1974.

1-2. Examples of the "free curve" in art in Alexander Dorner, *The Way Beyond 'Art'* (New York: Wittenborn, Schultz, 1947).

1-3. Examples of the "free curve" in art in Alexander Dorner, *The Way Beyond 'Art'* (New York: Wittenborn, Schultz, 1947).

2-1. Conceptual model of biocentrism. (Graphics by Liv Valmestad, University of Manitoba, Architecture and Art Library)

3-1. Franz Marc, *Der Stier*, 1911, oil on canvas, 101 X 135 cm. (Guggenheim Museum, New York) After: Susanna Partsch, *Franz Marc 1880-1916* (Cologne: Benedikt Taschen, 1991), 32.

3-2. László Moholy-Nagy, untitled (Portrait of Hans Harmsen), n.d. [1920], crayon on paper (International Museum of Photography at George Eastman House Collection, Rochester, New York, inv. no. 81:2166:01) After a photograph from the files of Hattula Moholy-Nagy. Reproduced with permission.

3-3. László Moholy-Nagy, *F in Feld*, dated "1920" [c. 1921], gouache and collage, 22 X 17.7 cm. (Kunsthandel Wolfgang Werner, Berlin) After: *Laszlo Moholy-Nagy zum 100. Geburtstag* (sic) (Berlin: Kunsthandel Wolfgang Werner, 1995), no. 1.

3-4. László Moholy-Nagy, *Ernőnek!*, gouache and collage, n.d. [c. 1921], 17.5 X 24.2 cm. (Private Collection) Photocopy after a colour transparency in the files of Hattula Moholy-Nagy, Ann Arbor. Reproduced with permission.

4-1. Charles-Edouard Jeanneret and/or Amadé Ozenfant, Spread from *L'esprit Nouveau* illustrating the analogy between ancient Greek Doric temples and late model cars. After: *L'esprit Nouveau* no. 10 (1920): unpag.

- 4-2. Charles-Edouard Jeanneret and Amadé Ozenfant. Illustration for their article "Sur la Plastique," with the basic geometric solids of which all architecture is to be built up. *L'esprit Nouveau* no. 1 (1920): 43.
- 4-3. Unidentified artist. Cover art and design for Raoul H. Francé, *Die Pflanze als Erfinder* (Stuttgart: Kosmos/Franck'sche Verlagshandlung, 1920).
- 4-4. After Pascher, *Flagellatenformen*, Raoul H. Francé, *Die Pflanze als Erfinder* (Stuttgart: Kosmos/Franck'sche Verlagshandlung, 1920), figure 9, p. 27.
- 4-5. László Moholy-Nagy with István Sebök, *Lichtrequisit einer elektrischen Bühne*, known as "Light-Space Modulator," 1922-30. After an archival photograph in the collection of Hattula Moholy-Nagy, Ann Arbor. Used with permission.
- 4-6. Pages 32-33 in Raoul H. Francé, *Die Pflanze als Erfinder* (Stuttgart: Kosmos/Franck'sche Verlagshandlung, 1920); on the origin of the turbine in nature.
- 4-7. Bernard Eilers(?), Photograph of a cross-section of a nautilus shell from Klee's collection of the 1920s. After: Paul Klee, *Notebooks*, Vol. 2, *The Nature of Nature*. Jürg Spiller, ed. (Woodstock, N.Y.: The Overlook Press, 1992), 289.
- 4-8. Roland Holst, cover design for "Schelpennummer," *Wendungen* 5, no. 8-9 (1923). Photograph by Oliver Botar after the copy in the Thomas Fischer Rare Book Library, University of Toronto. Taken with permission.
- 4-9. J. B. Polak, radiographs of nautilus shells from the "Schelpennummer" of *Wendungen* 5, no. 8-9 (1923). Photograph: Staatsbibliothek Preussischer Kulturbesitz, Berlin.
- 4-10. J. B. Polak, radiographs of nautilus shells from the "Schelpennummer" of *Wendungen* 5, no. 8-9 (1923). Photograph: Staatsbibliothek Preussischer Kulturbesitz, Berlin.
- 4-11. Bernard Eilers, photographs of a shell from the "Schelpennummer" of *Wendungen* 5, no. 8-9 (1923). Photograph by Oliver Botar after the copy in the Thomas Fischer Rare Book Library, University of Toronto. Taken with permission.
- 4-12. Bernard Eilers, photographs of a shell cross-section from the "Schelpennummer" of *Wendungen* 5, no. 8-9 (1923). The nautilus shell section is at the right. Photograph by Oliver Botar after the copy in the Thomas Fischer Rare Book Library, University of Toronto. Taken with permission.

- 4-13. Page from Lazar El Lissitzky's article "K. und Pangeometrie" in: Carl Einstein and Paul Westheim, eds., *Europa Almanach* (Potsdam: Gustav Kiepenheuer, 1925), 110. The illustration is of J. B. Polak's radiograph of a "turbinen-Muschel."
- 4-14. László Moholy-Nagy, layout from *Malerei, Photographie, Film* (Munich: Albert Langen, 1925), 66-7. On the right is a photogram by Moholy-Nagy and on the left J. B. Polak's radiograph of a nautilus shell first published in *Wendingen*, 5, no. 8-9 (1923).
- 4-15. László Moholy-Nagy, layout from *Malerei, Photographie, Film* (Munich: Albert Langen, 1925), 68-9. On the right is a photogram by Moholy-Nagy and on the left J. B. Polak's radiograph of a triton shell first published in *Wendingen*, 5, no. 8-9 (1923).
- 4-16. Le Corbusier, layout from his *L'art décoratif d'aujourd'hui* (Paris: Les Éditions G. Crès, 1925), 167. The shell photograph by Bernard Eilers was first published in *Wendingen*, 5, no. 8-9 (1923).
- 4-17. Plate XII from Lewis Mumford, *Technics and Civilization* (New York: Harcourt, Brace and World, 1934), with a radiograph by J. B. Polak first published in *Wendingen*, 5, no. 8-9 (1923-), and a photograph of a hydro-turbine.
- 4-18. Lazar El Lissitzky, cover design, Lissitzky and Kurt Schwitters, "Nasci" issue of *Merz 2*, no. 8-9 (April-July 1924).
- 4-19. Lazar El Lissitzky, spread from Lissitzky and Kurt Schwitters, "Nasci" issue of *Merz 2*, no. 8-9 (April-July 1924), 81-2.
- 4-20. "Längeschnitt durch einen menschlichen Femur mit dem System der Knochenbälkchen. 1/2 nat. Grösse." From: Raoul Francé, *Die technischen Leistungen der Pflanzen* (Leipzig: Voigt, 1919), 209.
- 4-21. Lazar El Lissitzky, spread from Lissitzky and Kurt Schwitters, "Nasci" issue of *Merz 2*, no. 8-9 (April-July 1924), with a work by Kurt Schwitters at lower left.
- 4-22. Lazar El Lissitzky, spread from Lissitzky and Kurt Schwitters, "Nasci" issue of *Merz 2*, no. 8-9 (April-July 1924), with a work from El Lissitzky's *Kestnermappe* at right.

- 4-23. László Moholy-Nagy, figure 122 in his *The New Vision* (New York: W.W. Norton, 1938), 122, illustrating Francé's "seven biotechnical elements."
- 4-24. Ernst Haeckel, *Acanthophracta*, Plate 41 from his *Kunstformen der Natur* (Leipzig and Vienna: Bibliographisches Institut, 1899). (Collection of Oliver A. I. Botar)
- 4-25. Raoul H. Francé, *Ein Tropfen Sumpfwasser*, after: Rudolf Engel-Hardt, *Francé als Graphiker: Ein Weg zum "wirklichen Naturbild"* (Stuttgart: Walter Seifert, 1925), 115.
- 4-26. László Moholy-Nagy, untitled sketch for the space modulator *Prehistoric Construction* of 1942; ink and crayon on paper, 27 April 1941, 21.8 X 27.5 cm. (Collection of Oliver A. I. Botar and Serena Keshavjee)
- 4-27. László Moholy-Nagy, layout from *Malerei, Photographie, Film* (Munich: Albert Langen, 1925), including two photographs of cacti by Albert Renger-Patzsch. After the English edition, *Painting, Photography, Film* (Cambridge Mass.: MIT Press, 1969), 90-1.
- 4-28. László Moholy-Nagy, layout from *Malerei, Photographie, Film* (Munich: Albert Langen, 1925). After the English edition, *Painting, Photography, Film* (Cambridge Mass.: MIT Press, 1969), 50-1.
- 4-29. László Moholy-Nagy, layout from *Malerei, Photographie, Film* (Munich: Albert Langen, 1925). After the English edition, *Painting, Photography, Film* (Cambridge Mass.: MIT Press, 1969), 64-5.
- 4-30. Figures 17-20 from Raoul H. Francé, *Bios: Die Gesetze der Welt*, volume 1 (Munich: Franz Hanfstaengl, 1921).
- 4-31. László Moholy-Nagy, layout from *Malerei, Photographie, Film* (Munich: Albert Langen, 1925). At left is a photo of a gramophone record by Moholy-Nagy. At right is a nighttime shot of Bremen's main square by Grünewald. After the English edition, *Painting, Photography, Film* (Cambridge Mass.: MIT Press, 1969), 62-3.
- 4-32. László Moholy-Nagy, layout from *Malerei, Photographie, Film* (Munich: Albert Langen, 1925). At left is a radiograph from AGFA studios of a group of hands, at right is a radiograph of a frog by Schreiner of Weimar. After the English edition, *Painting, Photography, Film* (Cambridge Mass.: MIT Press, 1969), 68-9.

4-33. László Moholy-Nagy, layout from *Malerei, Photographie, Film* (Munich: Albert Langen, 1925). At left is a photograph by Martin Johnson of zebra and gnus at a watering hole in East Africa, and at right is an aerial photograph of an experimental fish farm in Bavaria by Lohöfener. After the English edition, *Painting, Photography, Film* (Cambridge Mass.: MIT Press, 1969), 68-9.

4-34. László Moholy-Nagy, layout from *Malerei, Photographie, Film* (Munich: Albert Langen, 1925). At left is a micrograph by F. M. Duncan of a barnacle's foot, and at right a photograph of a head louse from the Atlantic agency. After the English edition, *Painting, Photography, Film* (Cambridge Mass.: MIT Press, 1969), 52-3.

4-35. Layout for Walter Rietzler's article "Die Einheit der Welt: Ein Gespräch," *Die Form* 2, no. 8 (1927): 243. After the copy in the Bauhaus-Archiv, Berlin. Xeroxed with permission.

5-1. Hans Windisch, designer & editor, spread from *Das Deutsche Lichtbild 1927* (Berlin: Verlag Robert & Bruno Schultz, 1928), 12-13. At left is Albert Renger-Patzsch's image of a train locomotive, and at right is Dr. Bergner's photo of a dandelion gone to seed.

5-2. Hans Windisch, designer & editor, spread from *Das Deutsche Lichtbild 1927* (Berlin: Verlag Robert & Bruno Schultz, 1928), 20-21. At left is Mario von Bucovich's seascape and at right Charlotte Rudolph's photograph of Palucca.

5-3. Hans Windisch, designer & editor, spread from *Das Deutsche Lichtbild 1927* (Berlin: Verlag Robert & Bruno Schultz, 1928), 84-5. At left is a photograph of the structure of the Luftschiffbau Zeppelin, and at right is Ernst Krüger's image of grasses in snow.

5-4. Hans Windisch, designer & editor, spread from *Das Deutsche Lichtbild 1927* (Berlin: Verlag Robert & Bruno Schultz, 1928), 48-9. At left is Adolf Miethe's photograph of the moon, and at right are Dr. Kröhnke's microscopic photographs.

5-5. Hans Windisch, designer & editor, spread from *Das Deutsche Lichtbild 1927* (Berlin: Verlag Robert & Bruno Schultz, 1928), 104-05. At left is F. Jähne's landscape and at right is Albert Renger-Patzsch's *Grossblutige Aasblume*.

5-6. Hans Windisch, designer & editor, spread from *Das Deutsche Lichtbild 1927* (Berlin: Verlag Robert & Bruno Schultz, 1928), 46-7. At left is F. Wasow's photograph of a male Balinese dancer, and at right are Dr. Bergner's microscopic

photograph of a flea and Otto Lehmann's micrograph of trapezoidal fluid crystals.

5-7. Hans Windisch, designer & editor, spread from *Das Deutsche Lichtbild 1928* (Berlin: Verlag Robert & Bruno Schultz, 1929), 60-1. At left is Max Wolf's photo of the Milky Way, and at right is A.u.P. Neiner's spider web image.

5-8. Hans Windisch, designer & editor, spread from *Das Deutsche Lichtbild 1928* (Berlin: Verlag Robert & Bruno Schultz, 1929), 70-1. At left is Max Wolf's photograph of a fly's head, while at right is Karl Hansen's micrograph of the cross section of a hair.

5-9. Hans Windisch, designer & editor, spread from *Das Deutsche Lichtbild 1930* (Berlin: Verlag Robert & Bruno Schultz, 1931), 102-3. Photographs by Karl Blossfeldt from *Urformen der Natur*.

5-10. Hans Windisch, designer & editor, spread from *Das Deutsche Lichtbild 1927* (Berlin: Verlag Robert & Bruno Schultz, 1928), 102-3. At left is a radiograph of a cactus, both by the students of the Lette-Verein, Berlin.

5-11. László Moholy-Nagy, advertisement for men's clothing, 1929. Collection of the Bauhaus-Archiv, Berlin. After: Catherine David, ed., *László Moholy-Nagy* (Marseilles: Musées de Marseille and the Réunion des musées nationaux, 1991), 383.

5-12. László Moholy-Nagy, design for the poster of the "Werkbundaustellung Film und Foto 1929 Stuttgart," 1929. (Collection of the Kunstbibliothek, Staatlichen Museen, Preussischer Kulturbesitz, Berlin) After: Catherine David, ed., *László Moholy-Nagy* (Marseilles: Musées de Marseille and the Réunion des musées nationaux, 1991), 366.

5-13. Photographer unknown. "Raum 1" of the "Werkbundaustellung Film und Foto 1929 Stuttgart." After: *Werkbund Gedanken für Volksbildung, Kunsthandwerk und Industrie*, no. 5 (29 May 1929). Photocopy courtesy of Janos Frecot, Werkbund-Archiv, Berlin.

5-14. László Moholy-Nagy, layout for the cover of the catalogue *Internationale Ausstellung des Deutschen Werkbundes Film und Foto Stuttgart 1929*, with the official plan of the exhibition at the upper right. Raum 1 is the large space at the lower right of the plan. After: the reprint, Karl Steinorth, ed., (Stuttgart: Deutsche Verlags-Anstalt, 1979), unpag.

5-15. Photographer unknown. "Raum 1" of the "Werkbundaustellung Film und Foto 1929 Berlin." After a photograph whose original is in the Staatliche Museen, Preussischer Kulturbesitz, Berlin. Photocopy courtesy of Janos Frecot, Werkbund-Archiv, Berlin.

5-16. László Moholy-Nagy, *Huhn bleibt Huhn*, 1925, photomontage. After: Irene-Charlotte Lusk, *Montagen ins Blaue. Laszlo Moholy-Nagy. Fotomontagen und -collagen 1922-1943* (Berlin: Anabas and Werkbund-Archiv, 1980), 137.

5-17. Cover for *bauhaus* 2, no. 2/3 (1928): 22, the first issue Ernő Kállai edited. His photograph is at lower left.

5-18. Oskar Schlemmer, *schematische übersicht des unterrichtsgebietes "der mensch"*, 1928. After: *bauhaus* 2, no. 2/3 (1928): 22.

5-19. Panel of photomicrographs from the collection of Ernő Kállai mounted for the exhibition "Új Világkép" [New world image], held in Budapest, 1947. At lower right is a photomicrograph of the jaw-bone of a snake. After: Ernő Kállai, *Művészet veszélyes csillagzat alatt* [Art under dangerous constellations] Éva Forgács, ed. & intr. (Budapest: Corvina, 1981), plate 7.

5-20. Enlargement of the snake jaw bone rotated to a vertical position. After: Ernő Kállai, *Művészet veszélyes csillagzat alatt* [Art under dangerous constellations] Éva Forgács, ed. & intr. (Budapest: Corvina, 1981), plate 7.

5-21. Fritz Kuhr, *Die Idee*, 1929, coloured monotype, 49.5 X 35 cm. After: Peter Hahn, *junge maler am bauhaus* (Munich: Galleria del Levante, 1979), unpag.

5-22. Designer unknown, cover of Ernő Kállai, *A természet rejtett arca* [The hidden face of nature], with a diagram of dandelion seed patterns. (Budapest: Misztótfalusi, 1947).

5-23. Spread from Ernő Kállai, *A természet rejtett arca* [The hidden face of nature] (Budapest: Misztótfalusi, 1947). At left is Hein Gorny's photograph of a split cabbage, and at right is Frantisek Kupka's *Creation* [1911-20, oil on canvas, 115 X 125 cm., private collection].

5-24. Ernő Kállai, "Bioromantik," *Fórum* (1932): 271. Richard Oelze's *Zeichnung* is illustrated. After the copy in the Archive of the Hungarian National Gallery, Budapest.

INTRODUCTION

Plumbing the Depths

biomorphic art. [A]bstract art in which shapes and masses are abstracted from the ... animate rather than geometric and inanimate objects. (Haggar 1962):

Modern art tends to be written about the artists and their friends ... and by generalizers and popularizers ... with the result that the mosaic of movements has remained largely unaffected, to the detriment of unorganized artists and traditions. For example, there is a line of biomorphic art, that, to the extent that it is discussed in the usual framework, could only be viewed as part of Surrealism. What failed to fit would come under such headings as Precursors of, or The Inheritance of, Surrealism, or, maybe, just plain Independents ... or nuts, off the main-line. (Alloway 1965)²

The [biomorphic] works on these pages were created over ... three decades and belong to no single "school" ... the many traits they have in common indicate that they are part of a continuing tendency. (Goldwater 1969)³

[In the publication] of the 1950s, devoted to contemporary art, the [works] give the impression of a standard abstraction. The superficial effect is that of sweeping curves, undulating masses, "organic" forms, signs and "écriture" of a more or less controlled wildness.... This "informal" art was undeniably a style.... Amongst the ... modern styles perhaps the postwar style, whether one calls it Stil Novo, Sputnik, Brussels, Kidney-table-style or whatever, had the widest span. It was a style which ... pervaded all areas of daily life.... It was an international style that ranged from high art through lower art to the design of consumer goods. (Van Geest 1983)⁴

Thirties biomorphism, both Surrealist and non-Surrealist, was ... associated with the ... formal possibilities provided by a near-abstract glimpse of the natural world through microscopes and telescopes, [which] provided new paradigms for looking at and depicting nature... [A]rtists used biomorphic style to celebrate the micro-macro vision of nature ... as a modern, liberating principle of pictorial design. (Weiss 1985)⁵

The great achievement of our era is *biological thinking*, which has revolutionized science and art. Expressionist art aims at inner truth and away from the external world; it is biological thinking that has taught us that "the invisible inner element produces visible form." (Stadelmann 1916)⁶

Begriffe wie Expressionismus und Surrealismus, die auf Franz Marc und Klee oder Max Ernst ... zutreffen, sind ... geeignet, den besonderen Sinn zu bezeichnen, der die Vision dieser Künstler den Grenzen der bürgerlichen Romantik entführt. Es gehören ihrer Reihe zudem auch Maler und Bildhauer an, die ... jeglicher Gegenständlichkeit in ein Phantasiegefüge von Elementarformen dringen. Und gerade bei diesen bildnerischen Urzeichen des Lebens ist der Leitgedanke jener Entwicklung am deutlichsten, die von Franz Marc bis Hans Arp, von Archipenko bis Brancusi reicht. Eine *Bioromantik* ist dabei, den Geist ... zu den Urquellen und Trieben des Lebens zu führen Das Bewusstsein um die irrationalen Verstrickungen des Ichs mit den Keimwesen und -Strukturen der Natur fühlt sich rätselhaft angezogen durch den Anblick von Mikro- und Röntgenaufnahmen. Sie sind die Phantasie der Bioromantik so anregend, wie das Studium der Anatomie für die Aktmalerei.... Die Kunst kehrt in den mütterlichen Schoß der Schöpfung zurück. Das ist der Sinn ihrer Bioromantik. (Kállai 1932)⁷

It is hardly accidental that ... modernism... arises ... simultaneously with modern biology. The two viewed in tandem ... offer the most substantial proof for the unity of cultural development and pose a significant challenge to those who claim that large concurrent cultural movements usually have little impact on each other. And it is ... the vitalism inherent in early modern biology that must concern us if we hope to grasp why modernism has emerged at a particular moment under specific cultural conditions. (George Rousseau 1992)⁸

As a result of a century-long tendency [by biologists] to incorporate esthetic principles in the interpretation of organic forms ... the external forms of organisms had gained greatly in esthetic value [especially] ... at the microscopic level, where emergent order induces the most direct expression of formative principles. In the art of the twentieth century there are innumerable examples of exquisite sensitivity to the inner formative properties of organisms and these stand in direct historical continuity with the efforts of biologists

over the previous century to describe the processes by which forms arose. (Ritterbush 1968)⁹

Following Rodin, other sculptors, both representational and abstract in their work, adopted the vitalistic attitude.... [I]t was one of the few ideas in modern sculpture that sculptors often mentioned when explaining their work process and attitudes toward materials Perhaps the personal, almost religious, fervour of the *vital impetus* made it incomprehensible to the non-artist... [T]he critic had to confront both a literary or overtly stylistic influence, and a *biological* relationship between the artist and his materials. Not until the 1950s did any critic really begin to look at vitalism as a separate and specific philosophy for the creation of sculpture.... If Bergson proposed neo-vitalism as a philosophical doctrine at the beginning of this century, then why did it take nearly half a century for a major critic to identify vitalism as a central doctrine of modern sculpture? (Burnham 1968)¹⁰

The organic metaphor has been dominant in most discussions of similar images from art and science. In modernism, the organic metaphor was deeply pervasive The creative process has been explicated in terms of biology. Predictably, German artists (those closest to idealist Romanticism) have attempted to build systems based on organic correspondence. Klee and Kandinsky are the leading examples. The Surrealist enterprise is the final apotheosis of the organic. And the biomorphic form it donated to art has been durable.... Is it too obvious to suggest that artists ... might, at the beginning of Surrealism, have acquainted themselves with the results of a century of microscopic morphology? Deeply immersed in organicism, it seems unlikely that artists would not be aware of its forms. The popular science books of the late nineteenth century, when such artists were young abounded in such illustrations. An examination of artists' journals and libraries from this point of view is indicated. (O'Doherty 1978)¹¹

Despite the efforts of critics like Greenberg and Danto modern art cannot be forced into the straightjacket of linear development.... A more responsible approach to the art and architecture of the century requires an openness to patterns of change that cannot be synthesized to create a comprehensible totality. (Taylor 1992)¹²

Art history has begun to make a significant contribution to the understanding of modernity, yet its practice remains too confined within national boundaries, and to a structure of inquiry still constrained by those reified constructs of national schools. ... [A]n international and comparative approach would help to counteract the undue and misleading prominence given to French culture as the exemplary culture of modernity -- a prominence that has everything to do with received value judgements, institutional deadweight, and the academic job market, and nothing to do with the needs of serious historical method. (A. Hemingway 1996)¹³

If we wish to understand and appreciate formal beauty we must ... concentrate on the details, on the form of the root of a tree, on the way in which a leaf is connected to its stalk.... Our eye must note ... every nuance in the form. For there is only one point in our field of vision ... which is clearly seen, which can hold some meaning for us. If we see in this way, an immensely rich new world is revealed to us, full of totally new experience.... Nature seems to live and we begin to understand that there really are sorrowing trees and ... terrible, gruesome flowers. (Endell 1897-8)¹⁴

scientific ... expeditions ... have brought to light an undreamed abundance of new organic forms.... a new world was revealed by the great advance of microscopic research ... and especially by the discovery of the marvellous inhabitants of the deep sea ... the peculiar beauty and diversity of which far transcend all the creations of the human imagination. (Haeckel 1899)¹⁵

I am like an ancient mariner who has spent his life traveling from isle to isle in the ocean of Nature ... but who, paying heed to oar and sail and helm, has been unable to devote himself to these tempting sights. Now at ... last I have learned and seen with my own eyes that the immeasurable abyss has been fathomed; that the infinite variety of forms deriving from utter simplicity has been lifted into the light of day in all its interrelationships; and that the great work ... has been duly done. (Goethe)¹⁶

I am a form in the green ocean of being. (Egyptian "Book of the Dead")¹⁷

Creating forms means: Life. (Schlemmer 1915)¹⁸

The shapes of time are the prey we want to capture. The time of history is too coarse and brief to be an evenly granular duration such as the physicists suppose for natural time; it is more like a sea occupied by innumerable forms of a finite number of types. A net of another mesh is required, different from any now in use. (Kubler 1962)¹⁹

As a series, these passages indicate a lack in the art historical literature. They point to the need for a systematic study of "biomorphic" style. They hint at a level of complexity which requires special measures. They suggest historiographic strategies which are formal as well as contextual and thematic, both diachronic and synchronic rather than linear and teleological; critically historical rather than fixated on surfaces and epistemological problems; interdisciplinary and international rather than limited by disciplinary and national boundaries. They direct us towards the waters I troll in this dissertation. They outline the templates I use to weave the mesh of my net. They establish the metaphor I employ in this introduction -- one which suggests my conceptual inclinations. Though they are both aquatic, I oppose Goethe's and Kubler's (ancient²⁰) oceanic metaphor of historical time to the fluvial one employed by Alfred Barr in his 1936 flow chart published in *Cubism and Abstract Art*.²¹ Currents exist at sea, but flow is not in one direction only. (Fig. 1-1)

Because these waters are so vast, I undertake here the *prolegomena* to a study of some still little-understood phenomena to be found in the overfished waters of early- to mid-20th century Modernism. My net is woven to catch artworks termed "biomorphic" or "organic" in form; works by artists such as Hans Arp, Willy Baumeister, Constantin Brancusi, Alexander Calder, Arthur Dove, Max Ernst, Naum Gabo, Arshile Gorky, Raoul Hausmann, Barbara Hepworth, Wassily Kandinsky, Paul Klee, Frantisek Kupka, Franz Marc, André Masson, Mikhail Matiushin, Joan Miró, László Moholy-Nagy, Henry Moore, Isamu Noguchi, Georgia O'Keeffe, Picasso, Jackson Pollock, Kurt

Schwitters, Ján Styrsky, Yves Tanguy and Toyen. My customized net also hauls up objects of "New Look," "Stil Novo" or "Curvilinear Modernist" biomorphic design by Alvar Aalto, Herbert Bayer, Fulvio Bianconi, Charles Eames, Arne Jacobsen, Friedrich Kiessler, Henning Koppel, Carlo Mollino, Noguchi, Eero Saarinen, Hans Wegner, Tapio Wirkkala, Russel Wright and Eva Zeisel;²² and "organic" architectural forms by Aalto, Le Corbusier, Hermann Finsterlin, Buckminster Fuller, Bruce Goff, Hugo Häring, Erich Mendelsohn, Pier Luigi Nervi, Richard Neutra, Oskar Niemeyer, Eero Saarinen, Hans Scharoun, Rudolf Steiner, Bruno Taut and Frank Lloyd Wright.²³ Hauled in with the rest of the catch are, finally, the products of Modernist close-up nature photography such as prints by Karl Blossfeldt, Imogen Cunningham, Ernst Fuhrmann, Raoul Hausmann, Paul Nash, Man Ray, Albert Renger-Patzsch, Edward Weston and Wols. Adapting my term from the English critic Geoffrey Grigson, who first applied the term "biomorphic" to Modernism, and from Alfred Barr, who established the taxonomy of Modernist art as it is still employed, and who conceived of this art as a category in formal terms, I employ "biomorphic Modernism" to describe this artistic style.²⁴

Many -- though by no means all -- of these works are to be found at the confluence of the currents of Neo-Romantic nature ideologies and of the at first sight odd combination of Art Nouveau, Expressionist, "Primitivist," International Constructivist, *Neue Sachlichkeit*, Surrealist and Abstract Expressionist artistic production. To refer to the *biological, nature-centric* aspect of the neo-Romantic groups and ideologies which informed the attitudes of the relevant thinkers, artists and critics (*Lebensphilosophie*, the *Reformbewegung*, neo-Vitalism, *Bergsonisme*, the *Monistenbund*, Organicism, Holism, neo-Lamarckism, neo-Transcendentalism), I revive a German term employed during the first third or so of the 20th century by the neo-Vitalist philosopher Ludwig Klages, his disciple Hans Prinzhorn, and the ecologist and popular

biologistic philosopher Raoul H. Francé: *Biozentrik*. As such, *Biozentrik* is here constituted as the intersection of that bundle of opinions, theories, ideas and practices within these intellectual currents, which privileged biology as an epistemological source as well as the concept of our inseparability from and dependence on "nature," and which emphasized flux or Becoming, rather than stasis, or Being in nature. It can best be characterized as *Naturromantik* updated by 19th-century biologism, what Stadelmann, probably following Jakob von Uexküll, referred to as "biologisches Denken" in 1916.

The cognate English term "biocentrism" has a history of usage. The 1933 edition of the *Oxford English Dictionary* defines "biocentric" as "treating life as a central fact,"²⁵ while in his introduction to Prinzhorn's study of the art of mentally disabled people, *Bildneri der Geisteskranken*, James L. Foy writes that "Biocentrism provides an outlook on man through a new kind of recognition of man's intimate and inescapable kinship with, and dependence upon, the self-regulating animal, vegetable and inorganic worlds,"²⁶ that is through a kind of anti-anthropocentrism.²⁷ Eco-ethicist Paul Taylor's usage of it shows that "biocentrism" continues to be employed in that sense today, though it now carries a much stronger connotation of radical, "deep" environmental thinking.²⁸

The biocentric attitude rejected anthropocentrism, decentering the human species in favour of the totalizing eighteenth century constructs "nature" and "life."²⁹ In place of Jean-Jacques Rousseau's Enlightenment call for a "return to nature," which implied a dualistic division between the "human" and the "natural," humans -- rather than as producers of culture, nature's "other" -- were now seen to be part of this larger whole of "nature." Everything humans did and produced was now seen as part of nature, and hence explicable in its terms. Nietzsche called for a wholesale rethinking of ethics and morality in the light of this stupendous shift in *Weltanschauung*. As Raoul Francé put it in the early 20s, "seen

from the height of our contemplation[,] existence and happening, world and processes of the world melt into one, into the notion of the natural."³⁰ "There is only one law. We, natural beings, can only repeat the law of protoplasm and the structure of the world. The laws of mechanics are exemplified before our eyes in the objects of nature."³¹ Paul Klee phrased it thus at that time: "The artist cannot do without his dialogue with nature, for he is a man, himself of nature, a piece of nature and within the space of nature."³² Max Ernst wrote that "Arp's soft semi-organic forms, his amoeba-like suggestions... teach us to understand the language spoken by the universe itself."³³ The English organicist philosopher so influential on English Neo-Romanticism, Alfred North Whitehead, wrote of the realization that "human beings are merely one species in the throng of existences. These are animals, the vegetable, the microbes, the living cells, the inorganic physical activities."³⁴ Herbert Read articulated this attitude thus:

What we have to find ... is some touchstone outside the individual peculiarities of human beings, and the only touchstone which exists is nature. And by nature we mean the whole organic process of life and movement which goes on in the universe, a process which includes man, but which is indifferent to his generic idiosyncrasies....³⁵

Most succinct was Jackson Pollock, when, in answer to Hans Hofmann's warning not to paint his work "by heart" but rather from nature, he replied, "I *am* nature.... Your theories don't interest me,"³⁶ and "My concern is with the rhythms of nature, the way the ocean moves, I work inside out like nature."³⁷

Implicit in such views are the themes of flux, change, metamorphosis, formation and formlessness; an eternally burgeoning life-complex, of the privileging of "Becoming" over "Being,"³⁸ of the passage from *informe* to form and back again. With roots in the thinking of Heraclitus, and central to the work of philosophers from Goethe and Nietzsche³⁹ to Bergson, the centrality of formlessness and its temporal corollary,

flux, is implicit in organicist biological views of nature, and its "representation" is pivotal to biomorphic Modernism.⁴⁰

Within the biocentric discourse, however, I discern a rupture around World War One, and a subsequent emergence into the highly-charged political landscape of Weimar Germany. From a more romantically-inclined *Neue Naturphilosophie*, as Raoul Francé termed turn-of-the-century biocentrism -- suffused with what Max Scheler referred to as *kosmovitale Einsfühlung* -- the practice and thinking of Francé, Klages, Jacob von Uexküll, Oswald Spengler and others constituted an interwar biocentrism which was both more biologicistic and functionalist (as defined by von Uexküll in his "biologische Weltanschauung" declared in 1916 and Francé in his "Objective" or "Biocentric Epistemology" announced in 1920), and more pessimistic, as articulated by Spengler and by Klages' *Biozentrik*.

It was as a concomitant of interwar biocentrism that people in Germany became aware of environmental degradation. An outgrowth of *fin-de-siècle Kulturkritik* in Germany, Ludwig Klages -- like Francé, Theodor Lessing and Heidegger⁴¹ -- systematically considered this danger, and he laid blame with materialism, industrialism and technology, in short with modernity. At a lecture given for the founding meeting of the *Freideutsche Jugend* in 1913, Klages thundered

Schrecklich ... sind die Wirkungen des 'Fort-schritts' auf das Bild besiedelter Gegenden. Zerrissen ist der Zusammenhang zwischen Menschenschöpfung und Erde, vernichtet für Jahrhunderte, wenn nicht für immer, das Urlied der Landschaft.... Unter den Vorwänden von 'Nutzen', 'wirtschaftlicher Entwicklung', 'Kultur' geht er in Wahrheit auf Vernichtung des Lebens aus.⁴²

Francé, in his many popular publications, emphasized the importance of natural and historical preservation in the *Heimat*, a view which fed as easily into anarchist notions of cultural and economic autonomy and harmony, as it did into Walter Darré's *Völkisch* ideology of *Blut und Boden*.⁴³ British

historian Anna Bramwell has termed the intellectual-political movement towards ecological views of nature and environmental preservationist ideas since about 1880 "ecologism."⁴⁴ Ecologism is thus a category of intellectual history closely related to though not identical with biocentrism.

As suggested by the use made of Francé's writings, this environmental concern sometimes had a sinister, indeed dangerous edge to it. Robert A. Pois has identified a "Religion of Nature" within National Socialism, a fusion of neo-Romantic nationalistic nature mysticism and a mean-spirited biologism, thus highlighting the Nazis' participation in some of the popular intellectual trends of their time.⁴⁵ As Pois puts it, "Even the core of the National Socialist religion of nature was not something utterly alien to Western/Central European cultural history in general, and that of Germany in particular. In part it was rooted in a general *malaise* that was a byproduct of material progress, a *malaise* which found articulation in 'the return to nature.'"⁴⁶ Indeed, Bramwell has confirmed this ecological side of Nazism as part and parcel of the general "ecologistic" tradition. With the coming to power in 1933 of National Socialism -- an aspect of which was essentially a biocentric variant of Fascism⁴⁷ -- the political context of biocentrism in general shifted greatly.

Because of the inestimable horror brought on by the Nazis' policies, the period of National Socialism has acted as a kind of black hole of history, distorting any ideas which passed by it much as the powerful gravitational field of the black hole does even the seemingly unalterably vectorial phenomenon of light itself. This distortion, like that exercised by those great gravitational sinkholes, can act retroactively as well as subsequently. The psycho-social trauma of National Socialist political power was such that it casts its shadow in both directions along the temporal axis, resulting in historical absurdities such as the retroactive characterization of Nietzsche, Ernst Haeckel and indeed all pre-World-

War-One Monists as Nazis *avant-la-lettre*.⁴⁸ Furthermore, because of the biologicistic nature-centrism of National Socialist ideology, all biocentrism has since been tainted, though through an interesting case of selective memory and marking, the post-war environmental movement has tended to be exempted from this.⁴⁹ The problem is not necessarily with the environmentalist movement or its goals, or with biocentrism in general, but with a crude if emotionally understandable approach to history of a kind of guilt by association. While it *is* important to determine the role biocentrism played in the historical catastrophe of World-War-Two Europe (Bramwell and Pois have begun to examine this question) one need not throw the baby out with the bath water.⁵⁰

In 1931-32, on the eve of Nazi political power the Hungarian pedagogue and art critic active in Weimar Germany, Ernő Kállai, was the first to observe the cultural shift towards biocentrism among artists of his day, referring to the results of the interaction as the cultural pattern of *Bioromantik*:

Die Bioromantik scheut es nicht, mit offenen Augen in diese Abgründe unserer Kreatürlichkeit zu blicken....⁵¹ Mann sollte in diesem seltsamen [biromantische] Phantasien ... auf die Zeichen einer geistigen Wendung achten, die auch an anderen Fronten der Zeit festzustellen ist als entschiedene Abkehr vom Rationalismus-Materialismus-Utilitarismus. Die naturverbundene Leib-Seele-Einheit des Menschen, vom mechanistisch-quantitativen Produktions- und Ordnungsapparat der Zivilisation grausam in Stücke zerschlagen, sucht ihre ursprüngliche Geltung im Zurückgehen auf letzte Kraftreserven und -Reservate wiederzufinden.⁵²

These anti-materialistic, anti-mechanistic, anti-technological and nature-centric aspects of biocentrism place it into what Jackson Lears has termed "antimodernism."⁵³ While Lears' "antimodernism" was a North American cultural trend related to the Arts and Crafts movement, it is now -- perhaps somewhat unfortunately -- being employed in an expanded sense to refer to the ambivalent attitude towards *modernity*. Both "antimodernism" -- what Gianni Vattimo has, I think, more happily

termed "the crisis of humanism" -- and modernity, were sociocultural phenomena which were accelerating in the late 19th century, and with particular force in Germany, which will be the primary locus of this study.⁵⁴ Moreover, as we have seen, the biologicistic and monistic nature-centrism of Nazism renders the biocentrism of the artists and thinkers we are dealing with here problematic, and some will see any biocentric infusions into Modernist artistic practice as "reactionary," even Fascist moves.⁵⁵

Apart from the ahistorical and anachronistic aspects of such views already pointed to however, the cases of Kállai, Raoul Hausmann, Hannah Höch, Moholy-Nagy, Hannes Meyer, Lucia Moholy, Lazar El Lissitzky, Walter Benjamin, and other Leftist biocentric intellectuals who promoted a rapprochement between "nature" and modernity precisely during the rise of a biocentric Fascism, demonstrate that the interrelations between "antimodernity," modernity, biocentrism and politics are far more complex than one would think given prevailing attitudes among historians today.⁵⁶ Recent research has illustrated just how complex and contradictory the picture really is. Just as Hartmut Nowacki has shown that *Lebensphilosophie* (a crucial component of biocentrism) was central to the philosophical development of the German Communist Party between the wars, and Seth Taylor has documented Nietzsche's formative influence on left-wing Expressionist intellectuals, Jeffrey Herf and Andrew Hewitt have demonstrated that there were decidedly "Modernist" elements in Fascist aesthetics, and that such aesthetics accepted, even promoted, the technological elements of modernity, while Kenneth Silver has documented the right-wing and nationalist aspects of World-War-One and post-war French Modernism.⁵⁷

Taylor's reevaluation of Nietzsche's influence is exemplary with respect to my critique of prevailing historical attitudes:

The Nietzsche renaissance after the Second World War

stripped away the myths surrounding Nietzsche's own philosophy but it never challenged the myth surrounding Nietzsche's role in German history. That myth was simply that Nietzsche was unequivocally the philosopher of the German right. The reality was quite different. Long before the German right appropriated Nietzsche's philosophy in defence of German culture, the Expressionist left used that same philosophy to try and change German culture.⁵⁸

Nietzsche's much-maligned Will to Power is, according to Joan Stambaugh, to be understood as the force determining the pattern of becoming in the world (a pre-Bergsonian *élan vital*), and not -- as the Nazis understood it -- a justification for power politics: "Power for Nietzsche has essentially nothing to do with political power or any sort of power over others. In Nietzsche's radically dynamic view of the world, whatever does not increase in power automatically decreases. There is no *stasis*, no status quo."⁵⁹ Thus, "the world [according to Nietzsche] is not mechanistic, nor teleological, but a play of forces increasing and decreasing in the innocence of becoming where there is no order already present in things, but a multitude of free possibilities for creativity to work."⁶⁰ This is why Nietzsche privileged art over philosophy, and -- presumably -- why so many artists responded to this idea:

According to Nietzsche, the philosophers looked at the world passively and objectively. They reified and substantialized the flux of becoming. In contrast, the artist is active; he does not contemplate objects, but creates new forms. In so doing, he transforms the world and himself... When he is in an 'artistic' condition... man experiences the oneness of himself and the world; not passively in some sort of mystic absorption, but actively in transforming everything into reflections of his power and perfection.⁶¹

It is crucial for historians to at least attempt to deal with complexity rather than paper it over. It is important, furthermore, to avoid anachronisms, false logical associations and premature conclusions. One must come to expect the unexpected, "unholy" alliances, as it were. Just as antimodernity

was espoused by members of both the Left and Right, the political position of biocentrically-minded individuals was often fluid, moving between these poles, sometimes avoiding both. I discuss this fluidity in Chapter Two, and propose an adapted form of Bramwell's political taxonomy as a partial solution to the problem.

In his brilliant 1953 article "The Eye is Part of the Mind," Leo Steinberg writes of nature's "gestating images, shapes antecedent to the visible,"⁶² in effect, of what Georges Bataille refers to as the *informe*, all terms which suggest that these images were meant to signify the flux of Becoming. As Alexander Dorner has pointed out, at least since the age of Romanticism, some artists had adopted the curved line or form, i.e. the "biomorph," as the "hieroglyph" of Becoming.⁶³ Such shapes also appear in the products of imaging modalities like biological illustrations, and in microscopic, telescopic, x-ray and undersea photographs and films. Because of their formal similarities with biomorphic Modernist artworks, scientific images such as these are also caught in my trawl. As Metzger writes, "The hidden aspects of nature, changed in scale and in emphasis, are uncovered and focused upon rather than the surface appearances of forms"⁶⁴ "The elementary forms which men have instinctively given to their works of art are the same as the elementary forms which exist in nature," wrote Read.⁶⁵ I term the recognition of the similarity between biomorphic Modernist art and unfamiliar but naturally-occurring forms, the "naturamorphic analogy." This analogy has been a recurrent *topos* of art criticism since the 1920s. A subset of the naturamorphic analogy, the recognition by Modernist critics of the similarity between biomorphic Modernist art and scientific images -- especially what Harry Robin has referred to as the products of scientific "self-imaging" such as microscopic, telescopic and x-ray photography and film -- I refer to as the "scientific image analogy."⁶⁶ I

distinguish the naturamorphic and scientific image analogies from the related organic metaphor,⁶⁷ which sees artworks as being akin to organisms in their genesis and/or structure.

By their debris, I identify others who have been in these waters before me. Artist-theorists who took part in what I term the "biocentric Constructivist discourse," such as László Moholy-Nagy and Lazar El Lissitzky, were becoming conscious of the naturamorphic analogy by about 1924, while a key nature-centric artist such as Kandinsky anticipated such ideas before the war, and articulated them clearly by 1926. Among the earliest *critics* to do so were Walter Benjamin, in a 1928 review of Karl Blossfeldt's album of *fin-de-siècle* close-up plant photographs *Urformen der Kunst*;⁶⁸ the Czech avant-garde editor Karel Teige, who that same year compared the Surrealist paintings of Jan Styrsky and Toyen to undersea film stills from the UFA film *Wunder des Blauen Golfes* in a layout of his avant-garde magazine *ReD*; and Ernő Kállai, who, starting around 1929, was the first critic to treat the subject systematically. (Fig. Introduction 1)

Invoking what August Wiedmann has termed an organicist "cosmocentric," and what José Argüelles -- following Charles Henry and echoing Raoul Francé -- has called a "psychobiological" theory of a deep structure common to humanity and "nature", Lissitzky, Benjamin, Kállai and writers after them suggested that the similar scientific and artistic forms arose spontaneously and independently of one another.⁶⁹ As Wiedmann writes:

there existed a kind of parallelism according to which some of the essential forces of the universe have a duplicate subsistence in the mind of the painter. Such forces appeared in the organizing principles of the artist employed unconsciously in the construction of his pictures. In any event, the similarity between art and nature consisted in the fact that in both spheres production was spontaneous and autonomous.⁷⁰

M. H. Abrams associates this view with the organic metaphor: "The momentous historical shift from the view that the making of a work of art is a supremely purposeful activity to the view that its coming-into-being is, basically, a spontaneous process independent of intention, precept, or even consciousness, was the natural concomitant of an organic aesthetics."⁷¹

A related theme is the observation by mystics and artists of patterns or structures (in Johann Gottfried Herder's terms, *hieroglyphs*) repeating themselves at different scales, "on earth as in heaven." In the Hermetic tradition, from which Herder drew, this was referred to as the *aurea catena*, the golden chain, the analogy between macrocosm and microcosm.⁷² This *topos* is commonly invoked or observed by nature mystics, scientists, Neo-Vitalists and Monists of various kinds, because it implies a Monist approach, a unified field of Being. This "holy hieroglyph of Hermes" is the "one holy symbol: primordial image of creation, from which everything originated," which implies "One in All! and All in One! One universe of formation!" as Herder phrased it.⁷³ That this theme continued among the Moderns is demonstrated by Herbert Read's 1945 text that "...the elementary forms which men have instinctively given to their works of art are the same as the elementary forms which exist in nature. What are these forms in nature? They are present in the vast interstellar spaces of the universe as well as in the most microscopic cells and molecules of matter."⁷⁴ Just as the naturamorphic analogy and psychobiological explanations of it, the fashion for spiral form during the early 1920s in Central Europe discussed in Chapter Four, is closely connected to this *topos*. In chaos theory the repetition of structures and patterns at different scales is referred to as "self-similarity," and as chaos theory rather than Hermetic philosophy is the language of today's discourse on the subject, that is the term I will employ for this recurrent *topos* in the history of Modernist art.

Read's psychobiological explanation of the naturamorphic analogy is tempered by Siegfried Giedion through an approach that makes the point that it is the work of artists that opened the doors to the aesthetic appreciation of scientific imagery:

[György Kepes' book *The New Landscape*] with its fascinating display on the microscopic and the macroscopic forms of the physical world brings these within the range of emotional reaction. It reveals in its excellent pictures that the forms of the infinitely small and the forms of the infinitely large -- atoms and stars -- have reached the level of our emotional experience. The viewpoint is widened, but this enlargement of the psychic outlook has only been made possible by the preparatory opening of our emotional equipment by such modern painters as Kandinsky, Malevitch, Mondrian, Moholy Nagy, Klee, Arp and Miro, who -- with others -- have established stations along the road to a new vision of the world around us.⁷⁵

As we shall see in Chapter Five, Beamont Newhall made the same point concerning Moholy-Nagy's *New Vision* as opening the gates to our appreciation of scientific imagery in an aesthetic manner.

While not discounting the possibility of the systemic or unconscious connection between natural structures and artists' minds (a similar argument is put forward, after all, by Noam Chomsky in his theory of our acquisition of language), I would hold, as O'Doherty, Steinberg, Giedion, Kállai and Newhall have suggested, that an historically-based explanation is possible. As Bousquet, Ritterbush and Schmidt-Burkhardt have pointed out, and as a review of the secondary literature and of biomorphic Modernist artists' writings shows, artists such as Redon, Kubin, Arp, Klee, Kandinsky, Gabo, Kupka, Masson, Ernst, Miró, Moholy-Nagy, Moore, Tanguy and Zeisel either were looking through microscopes themselves, or were looking at scientific, particularly biological images such as microscopic photographs.⁷⁶ Rather than prove such an interest in the case of every artist, however, in Chapter Five I demonstrate that

scientific imagery was available to artists not only in the science textbooks of the schooling most of them had by the late 19th century, but far more specifically, in exhibitions and publications they had easy access to once they were practising artists.⁷⁷ This dissemination, begun by Ernst Haeckel at the turn of the century, was continued by his follower Raoul Francé, whose "Biocentric Epistemology" exercised an important effect on influential avant-garde practitioners in Weimar Germany such as Moholy-Nagy, El Lissitzky and Mies van der Rohe.⁷⁸

I argue in Chapter Four that Moholy's New Vision emerged from the biocentric Constructivist discourse. This discourse - with Hausmann, Lissitzky, Moholy-Nagy, Mies van der Rohe, and Hannes Meyer among its participants -- I show to have been inspired by Francé and his *Biotechnik*, forerunner of today's biotechnology or bionics.⁷⁹ Moholy's introduction of biocentric Constructivist ideas at the Bauhaus fit in comfortably with the organicism of the Bauhaus' predecessor Henry van de Velde and the "Biological Romantic" *Jugendstil* ambient he was part of, and major Bauhaus figures such as Schlemmer, Itten, Kandinsky, Klee, and even Gropius were biocentric. Also, I show that Gropius' successor Hannes Meyer, was, despite personal differences with Moholy, Klee and Kandinsky, himself a convinced biocentric Constructivist. It was Meyer who hired Ernő Kállai as the Bauhaus publicist after Gropius and Moholy's departure in 1928 and who directed Schlemmer to teach a course on "man in the world" based on biocentric principles. This discussion of International Constructivist artists highlights the fact that just as not all biomorphic Modernism is informed by biocentrism, biocentrically-informed artists did not always produce biomorphic Modernist art: Mies van der Rohe, of all the Modernists the most ardent follower of Raoul Francé, was also the most rigidly orthogonal in his formal vocabulary. The opposition, furthermore, between the functionalist-biologicistic biocentrism of Francé and von

Uexküll on the one hand, and the Klages-Prinzhorn *kulturpessimistisch* biocentrism on the other, is the source of the opposition between biocentric figures such as Johannes Itten and László Moholy-Nagy, and between Paul Klee, Wassily Kandinsky and Ernő Kállai on the one hand; and Hannes Meyer on the other. Building on his dialectical view of nature-technology already present in his Constructivist theory of the early 1920s, this opposition was named by Kállai in 1932-33 as *Bioromantik* versus *Technoromantik*, a polarity which reflected the larger polarity of interwar biocentrism. Indeed the two major actors in this thesis, Moholy-Nagy and Kállai, were by the late 20s paradigmatic representatives of these poles, and it is out of the creative tension of their interaction that Kállai's conceptualization of biomorphic Modernism as *Bioromantik* came about.

Thus, in Chapter Five I show that the crucial process of the *aestheticization of scientific imagery* was effected in Weimar Germany through the adoption of László Moholy-Nagy's *Neues Sehen*, his *New Vision*. As a result, by the mid-to-late 20s there was a general interest in the products of scientific photography, especially x-ray and microscopic photographs and films, and a desire to show such work in contexts usually reserved for art photography such as photographic journals and exhibitions.

Though I cannot explore these themes in this dissertation, I wish to point out that in a manner parallel to Moholy's *New Vision* in Germany, the Purists effected an *aestheticization of scientific imagery* in 1920s Paris through their search for structure, and the Surrealists continued the project in their quest for the "marvellous," the "uncanny," the "automatic," and the *informe*, affording biomorphic Modernist artists working in France analogous opportunities. Similar processes took place in what was then Czechoslovakia, in England, the United States, and probably elsewhere as well.³⁰

Moholy articulated *New Vision* through publications from

1925 on, and gave it three-dimensional expression in *Raum 1* of the 1929 *Film und Foto* exhibition of the German Werkbund in Stuttgart. It was in this "Room One" that Kállai had an epiphanic experience of the scientific image analogy. With Benjamin's insightful formulation probably on his mind, aware of the stylistic shift underway among artists around 1930, transformed by his experience in the exhibition, and cognizant of the Romantic background to the phenomenon he was experiencing, Kállai suggested a neologism to denote the interconnected problematic of scientific photography, biomorphic Modernism and biocentrism: *Bioromantik*. Thus, both Moholy's New Vision, which contributed so fundamentally to the aestheticization of scientific photography, and so to the adoption of the biomorphic style among artists in Germany, and Kállai's formulation of *Bioromantik*, were rooted in biocentrism and its Haeckelian tradition of aestheticized scientific imagery. Appropriately enough, Kállai's term was reinvented by Robert Schmutzler thirty years later as "Biological Romanticism," to describe biomorphic abstract Art Nouveau production by artists such as Henry Van de Velde, August Endell and Hermann Obrist, inspired by Haeckel's illustrations.⁸¹

I identify the three following elements as the principal components of an ecology of discourses: biomorphic Modernism and the related concept of the *informe*, biocentrism and its constituent "psychobiology," and the naturamorphic analogy including the related *topos* of self-similarity.⁸² The interaction of these discourses and *topoi* comprises a cultural pattern which is the subject of this work, and which, following Ernő Kállai, I term *Bioromantik*, or the Bioromantic cultural pattern. I believe that the mapping out of this system, the description of this pattern, the construction of its history, will greatly assist us in examining not only biomorphic Modernism, which as Alloway, Goldwater, and others have indicated, is a neglected area of 20th-century art, but Modernist art and culture in general. It will also aid us in

seeing, taking cognizance of hitherto ignored artistic phenomena such as art micrography. I do not wish to suggest that *all* works which are biomorphic Modernist in *style* carry with them biocentric *meaning*. Nor do I wish to exclude the possibility that artists avoided the attachment of any "meanings" to their works; some biomorphic Modernist artworks were intended as formal exercises. I am choosing, rather, to study what I take to be their preeminent meaning.

Research on biomorphic Modernist artists has confirmed that not only were many interested in the products of scientific imaging as sources of visual inspiration, but that many were steeped in biocentrism, which as we have seen, derived from Nature Romanticism and its sibling, the science of biology. As Cohn writes of Dove's painting, "The force lines of his art can now be understood as a pictorial analogue of nature's invisible energies."⁸³ Artists, and in some cases, scientists, viewed this work as a quasi-scientific kind of inquiry into natural morphology. Laurence Bass Becking was a scientist who recognized this quality in Edward Weston's photographs as early as 1930:

Natural science, as an impartial student of form, cannot but marvel at the rediscovery of fundamental shapes and structures by an artist. Weston has described the 'skeleton' materials of our earth -- rock, bone, and wood -- in a way both naive and appealing: in other words like an inspiring scientific treatise. He shows living matter, contorted like wrestlers' limbs, fighting the unseen forces of environment. He has seen the serene display of the spirals in the shell, the soft but stubborn curves of the kelps.... Reality makes him dream.⁸⁴

About the ability of biomorphic Modernist sculptors to represent the forces of nature Jack Burnham writes:

Vitalism, based as it is on nonphysical substances and states of life, is a metaphysical doctrine concerned with the irreducible effects and manifestations of living things. It was the great discovery of twentieth-century sculpture that these did not have to be appreciated through strict analogy. Visual biological metaphors exist on many levels

besides the obvious total configuration of an animal or human. The aesthetics of true organicism, on the other hand, is not grounded in the appearances of natural forms and their carryover into sculptural materials, but is concerned with the organization of processes and interacting systems.⁸⁵

A biocentric outlook, especially what Max Scheler referred to as its *vitalmystisch* component, also combined with Occult tendencies in the work of some artists to produce art which fit the Bioromantic pattern.⁸⁶ Just as Madame Blavatsky based her ideas partly on Darwin's theory of evolution and Rudolf Steiner was a scholar of Goethe's scientific writings, artists such as Bruno Taut, Kandinsky and Arthur Dove wedded science and the occult to produce their *Bioromantik*. As Cohn writes, for Dove

nature is both ... the raw data of physical perception and a mystic organism -- marvellous, mysterious and alive. It is both a scientific construct which can be empirically investigated and the projection of Dove's value-seeking imagination. It is an impersonal physical force indifferent to human existence and also the locus of transcendental truth.... Like his 19th century predecessors, Dove sought the pictorial means which could encompass this dualistic concept, but for him these means had to be consonant with the artistic values of the vanguard. To this end, he invented a highly personal style of painting informed on the one hand by contemporary discoveries in biology and physics and on the other by the literature of the occult. Contradictory as they may appear, science and occultism gave Dove new ways of depicting this hybrid vision.⁸⁷

Artists were well aware of these meanings and sources for their Modernist work. In 1925 Le Corbusier wrote: "Le symbole esotérique, nous l'avons, pour les initiés d'aujourd'hui, dans les courbes que représentent les forces, dans les formules qui résolvent les phénomènes naturels."⁸⁸ About his painting Dove wrote, "To make it breathe like the rest of nature, it must have a basic rhythm,"⁸⁹ while on photography Edward Weston intoned:

Clouds, torsos, shells, peppers, trees, rocks, smokestacks, are but interdependent, interrelated

parts of a whole -- which is life. Life rhythms ... become symbols of the whole. The creative force in man recognizes and records -- with the medium most suitable to him, to the object of the moment -- these rhythms, feeling the cause, the life within the outer form.⁹⁰

As August Wiedmann has pointed out, this is Romanticism: "What characterized the Romantic movement, above everything else, was its universal striving for unity and integration with the living order of creation."⁹¹ But it is insufficient to cite only the 19th-century Romantic precedent in the case of 20th-century artists, as the art historical literature has by and large done. Given the florescence of Neo-Romanticism at the last *fin-de-siècle*, its participation in what I term the biocentric discourse, and the further development of this discourse between the wars, a clearer picture of the *geistesgeschichtlich* context of this artistic production can only be given by the placement of such statements into their contemporary frameworks.

Thus, a pattern of association between 20th-century biomorphic style informed by scientific imagery and biocentric philosophy, i.e. a "Bioromanticism" can be confirmed. Within contemporary discourses, then, many biomorphic Modernist artworks figured patterns which signified natural forces and biocentric themes such as the life force, self-similarity, generation, flux and the "oneness" of humanity and "nature"⁹²; a reinterpretation of products of biomorphic Modernism in the light of this is in order. As such, *Bioromantik* was not merely a Neo-Romanticism. It was, rather, a late and refined aspect of "Primitivism."⁹³ However, it was the "primitive" or *Ur-*forms of nature which served as the most common models for artistic and social regeneration, rather than those of the social or racial "Other."

As we shall see, biocentric meanings were inherent to the very invention of the term "biomorph" by Alfred Haddon in 1895, and to its initial application to Modernist art by Geof-

frey Grigson in 1934. They tended to be repressed, however, when Alfred Barr adapted this label to his own, formally-defined category of biomorphic or organic abstraction in 1936, and ignored as a result of the Post-War prejudice against biocentrism.

Arguing for a complex art historical method which seeks to identify formal, thematic and systemic patterns or structures in the past; and recognizing the relevance of its genetic ("Romanticism"), formal ("biomorphic"), contextual ("biocentric") and thematic ("biotic," "biology," "biocentrism") connotations, I propose the acceptance of Kállai's suggestion that we term this ecology of discourses the "Bioromantic cultural pattern." Thus, my project (in the narrow sense) is to rehabilitate and expand Kállai's aim to establish *Bioromantik* as an art historical category, to historicize the phenomenon -- indeed, following Meyer Schapiro's complex definition, to define it as a "style."⁹⁴ If I can achieve this, I feel that I will have laid a course of the foundation of a systematic study of biomorphic Modernist art.

The concerns of the relevant artists and critics, and the reach of the biocentric notions they implicitly or explicitly espoused, require the expansion of the limits of my inquiry to include scientific image-making, avoiding the limitation of my project within the strict bounds of Modernist high art production.⁹⁵ My approach also draws on the conception of art history as *Geistesgeschichte*. To carry out a satisfactory historical analysis of the Bioromantic pattern requires, then, a strategy of interdisciplinarity -- one, which though it is based in art history, is informed by the histories of photography and architecture as much as it is by the history of ideas, of pedagogy, of science and scientific imaging, and of psychology.⁹⁶

Were I to treat the subject of *Bioromantik* fully, I would, in addition to the construction of the methodological framework such as I have done here, have to undertake more

systematic investigations of relevant anthropological and psychological theory, as well as of a larger number of paradigmatic artists, photographers and designers in Europe and North America,⁹⁷ waters too vast to be explored in a single dissertation. Therefore, while I have here outlined an overall plan of exploration, specific soundings have been chosen for this expedition, soundings which constitute a methodological and historical basis for a future, more complete history. This is not a history of *Bioromantik*, but rather a *prolegomena* to its study.

In this thesis, then, I problematize biomorphic Modernism and I conceptualize or frame it and its constituent elements as the Bioromantic cultural pattern. In Chapter One, after addressing some terminological and historiographic issues, and discussing British biomorphic Modernism and Barr's MOMA as the milieu in which "biomorphic" was first used in relation to Modernism, I review the literature. In Chapter Two I set up the historical construct of "biocentrism," look at some of its main players, identify its continuities and ruptures, and examine some political aspects. In Chapter Three I look at Moholy-Nagy and his intellectual origins in the anarcho-ecological, i.e. biocentric, wing of the German Youth Movement, the pedagogical reform movement and in the Bauhaus, here reviewed from the perspective of biocentrism. In Chapter Four I reconstruct the Raoul Francé-inspired biocentric Constructivist discourse in the fine arts and architecture of mid-20s Germany, and I situate the origins of Moholy's pedagogical program of New Vision in these milieux. In Chapter Five I show how New Vision brought about the aestheticization of scientific photography in Weimar German exhibitions and photographic journals, and I speculate on the effect that Moholy's biocentric theory of technologized image-making potentially had on the artistic practice of the time: This incorporation of the products of scientific self-imaging into the discourse of high art might have made them more easily

accessible to Modernist artists as visual models, a process which provides an historical alternative to psychobiological explanations of the naturamorphic analogy, and one that might at least partially account for the apparent stylistic shift around 1930 towards biomorphic Modernism. I also show that it was as a direct result of this process of aestheticization that Kállai engaged in his prescient framing work of the late 20s and early 30s. By examining the development of Kállai's conception of *Bioromantik*, I illuminate some of the historical and theoretical linkages that gave rise both to biomorphic Modernism and Kállai's recognition of it as *Bioromantik*.

Endnotes

1. Reginald G. Haggard, *A Dictionary of Art Terms* (Poole, Dorset: New Orchard Editions, 1962), 45.
2. Lawrence Alloway, "The Biomorphs Forties," *Artforum* 4, no. 1 (September 1965): 18.
3. Robert Goldwater, *What is Modern Sculpture?* (New York: The Museum of Modern Art, 1969), 56
4. Jan van Geest, "Prouve and the Organic. Some Remarks on the Origin of a Style," in Stanislaus von Moos and Chris Smeenk, eds., *Avant Garde und Industrie* (Delft: Delft University Press, 1983), 164.
5. Jeffrey Weiss, "Late Kandinsky: From Apocalypse to Perpetual Motion" *Art in America* (September 1985): 124.
6. Sixten Ringbom, "Paul Klee and the Inner Truth to Nature," *Arts Magazine* 52 (September 1977): 115. Ringbom is paraphrasing from Heinrich Stadelmann's *Unsere Zeit und ihre neue Kunst* (Berlin: Der Zirkel Architekturverlag, 1916), 4, 18, 21.
7. Kállai, "Bioromantik," *Forum* (1932): 271, 273, 274.
8. George Rousseau, "The Perpetual Crises of Modernism and the Traditions of Enlightenment Vitalism: With a Note on Mikhail Bakhtin," in Frederick Burwick and Paul Douglass, eds., *The Crisis in Modernism: Bergson and the Vitalist Controversy* (Cambridge: Cambridge University Press, 1992), 20.
9. Philip Ritterbush, *The Art of Organic Forms* (Washington: Smithsonian Institution Press, 1968), 76.
10. Burnham is referring to Herbert Read. Jack Burnham, *Beyond Modern Sculpture. The Effects of Science and Technology on the Sculpture of this Century* (New York: George Braziller, 1968), 71, 79-80.
11. Brian O'Doherty, Preface to Lewis R. Wolberg, *Micro-Art: Images in a Hidden World* (New York: Abrams, 1978), xviii-xix.
12. Mark C. Taylor, *Disfiguring: Art, Architecture, Religion*. (Chicago: University of Chicago Press, 1992.), 14.
13. Andrew Hemingway, "Marxism and Art History after the Fall of Communism," *Art Journal* (Summer 1996): 24.

14. August Endell, "The Beauty of Form and Decorative Art" (1897-8) in: Tim and Charlotte Benson, eds., *Form and Function: A source book for the History of Architecture and Design 1890-1939* (London: Crosby Lockwood Staples/Open University Press, 1975), 21. C.f. Odilon Redon's artistic credo from his "A Soi-Meme" (c. 1894-1898), quoted in Marianne Stevens, "The Transformation of the Symbolist Aesthetic," in: Douglas W. Druick, ed., *Odilon Redon. Prince of Dreams 1840-1916* (exh. cat.) (Chicago: The Art Institute of Chicago, 1994), 211. Thanks to Serena Keshavjee for pointing this out to me.
15. Ernst Haeckel, *The Riddle of the Universe*. Translated by Joseph McCabe. (New York: Harper and Bros., 1900), 341.
16. In a letter (undated) to Count Sternberg written in the early 19th century. Quoted in Rudolf Magnus, *Goethe as Scientist* (1906) Heinz Norden, trans. (New York: Henry Schuman, 1949), 33-4.
17. *Awakening Osiris: The Egyptian Book of the Dead*. Normandi Ellis, transl. (Grand Rapids, Mi.: Phanes Press, 1988), 90.
18. Oskar Schlemmer, diary entry for 10 April 1915 in: Oskar Schlemmer, *The Letters and Diaries*. Tut Schlemmer, ed., Krishna Winston, transl. (Evanston, Ill.: Northwestern University Press, 1990), 23.
19. George Kubler, *The Shape of Time: Remarks on the History of Things* (New Haven and London: Yale University Press, 1962), 13.
20. The fact that this metaphor is used in the earliest literary work known, the so-called *Book of the Dead*, confirms its antiquity. Modern use of it may well derive from Goethe.
21. Alfred Barr, *Cubism and Abstract Art* (New York: Museum of Modern Art, 1936), "flow chart" of movements on jacket, and p. 19.
22. On this design tradition, see Lesley Jackson, *The New Look: Design in the Fifties* (London: Thames and Hudson, 1991), who refers to it as the "New Look," Malcolm Haslam, *In the Nouveau Style* (Boston: Bullfinch Press, 1989), who terms it "Curvilinear Modernist," and Richard Guy Wilson, *The Machine Age in America 1918-1941* (New York: The Brooklyn Museum and Abrams, 1986), 58ff., who refers to it as the "biomorphic machine aesthetic," which Wilson sees as "an attempt to humanize the machine." (p. 58) While this is a clumsy way of approaching the subject, it is understandable given the dearth of writing on nature in the literature, and its plenitude concerning the mechanical. His discussion on the "organic" as related to the functional is more successful. The style is

- often referred to simply as "biomorphic" design as well.
23. As Carolina van Eck has recently written, "The history of [Modernist architectural] intellectual origins remains to be written, and the precise character of their connection with the organicist tradition is not yet clear." (*Organicism in Nineteenth-Century Architecture: An Inquiry Into its Theoretical and Philosophical Background*, Amsterdam: Architectur and Natura Press, 1994, 267.) Speaking a more orthogonal formal language, but heavily infused by organicist ideas, were major figures of Modernism such as Mies van der Rohe and Hannes Meyer. The standard account to date on both styles of "organic" architecture is Bruno Zevi's *Towards an Organic Architecture* (London: Faber and Faber, 1950), which depends on a functional rather than a stylistic definition of "organic." The list of conditions for "organic architecture" versus "inorganic architecture" is on pp. 69-70. For a more recent attempt at tracing the history of "organic" architecture from a more "green," i.e. "environmentalist" perspective, see John Farmer, *Green Shift: Towards a Green Sensibility in Architecture* (Oxford: Butterworth Architecture, 1996). For a discussion of Zevi's and Siegfried Giedion's definitions of "organic" versus Farmer's "green" one, see pp. 5-6.
24. The adaptation from Barr's terms "Non-geometric Abstract Art," "Biomorphic Abstraction," and "Organic Abstraction," as well as what I mean by "style," is explained in Chapter One. Third edition (1933) (Oxford: Clarendon Press, 1959), 180.
25. William Little, et al., *Shorter Oxford English Dictionary of the Mentally III* [1922] (Berlin: Springer-Verlag, 1972), X.
26. James L. Foy, Introduction to Hans Prinzhorn, *Artistry of the Mentally III* [1922] (Berlin: Springer-Verlag, 1972), X.
27. The term "biocentric" has continued in use in Germany, and has also been transplanted to North America. For example, the Norwegian philosopher of "Deep Ecology" Arne Naess and the American ecological philosopher Paul Taylor employ it in their publications. See Paul Taylor, *Respect for Nature* (Princeton: Princeton University Press, 1986), 245ff and on Naess, J. J. Clarke, ed., Introduction, *Voices of the Earth: An Anthology of Ideas and Arguments* (New York: Braziller, 1994), 13. Taylor defines what he terms the "biocentric outlook" in four points which encode a non-anthropocentric ecological worldview. See the excerpts from *Respect for Nature* in: Susan J. Armstrong and Richard G. Botzler, eds., *Environmental Ethics. Divergence and Convergence* (New York: McGraw-Hill, 1993), 354. The editors of this anthology seem to prefer the use of the term "ecocentrism" in this regard, but also note the employment of "deep ecology" and "holism" as synonyms. (pp. 369, 405)

28. See Chapter Three of his book *Respect for Nature: A Theory of Environmental Ethics* (Princeton N.J.: Princeton University Press, 1986), "The Biocentric Outlook on Nature."

29. I mean "nature" in the modern sense as the "other" of culture, i.e. sense A.5. in Lovejoy's typology. See Arthur Lovejoy, "'Nature' as Aesthetic Norm" (1927) in Lovejoy, *Essays in the History of Ideas* (New York: Capricorn, 1960), 71. See also, e.g., Klaus Mainzer, "Von der Naturphilosophie zur Naturwissenschaft: Zum neuzeitlichen Wandel des Naturbegriffs," in Hans-Dieter Weber, *Vom Wandel des neuzeitlichen Naturbegriffs* (Constance: Universitätsverlag Konstanz, 1989), 11ff; Thomas Bargatzky and Rolf Kuschel, eds., *The Invention of Nature* (Frankfurt/Main: Peter Lang, 1993), and Raymond Williams, "Ideas of Nature," in Jonathan Benthall, ed., *Ecology, the Shaping Inquiry* (London: Longman, 1972), 147, 156-79. Apparently Hegel was the first to use "nature" in the sense of being the "other" of culture. On "life," see, e.g., André Pichot, *Histoire de la notion de vie* (Paris: Gallimard, 1993).

30. Raoul Francé, *Plants as Inventors* [1920] (New York: Albert and Charles Boni, 1923), 10.

31. Francé, *Plants as Inventors*, 58.

32. Paul Klee [1923] *Notebooks, Volume 2, The Nature of Nature*, ed., Jürg Spiller, trans. Heinz Norden (Woodstock, N.Y.: The Overlook Press, 1992), 6.

33. Max Ernst, *Arp* (exh. flyer) (New York: Art of This Century, 1944), unpag.

34. Alfred North Whitehead, *Modes of Thought* (1938) (New York: The Free Press, 1968), 112.

35. Herbert Read, *Education Through Art* (New York: Pantheon Books, 1945), 16.

36. Reported by Robert Motherwell to Jonathan Fineberg, 15 January 1979, Greenwich, Conn. In: Jonathan Fineberg, *Art Since 1940. Strategies of Being* (Englewood Cliffs, N.J.: Prentice-Hall, 1995), 481.

37. Claude Cernuschi, *Jackson Pollock. Meaning and Significance* (New York: Harper Collins, get date), 135.

38. On this idea as expressed through art, see Alexander Dorner, "The Designer as Energy in the Self-Changing Life Process, in his *The Way Beyond 'Art': The Work of Herbert Bayer* (New York: Wittenborn Schultz, 1947), 32ff.

39. See Joan Stambaugh, *The Other Nietzsche* (Albany: State University of New York Press, 1994): 22-23, 97.

40. Since Christa Lichtenstern has done such a thorough job of examining the manifestations of Goethe's concept of metamorphosis in modern art from Philip Otto Runge to Josef Beuys, including biomorphic Modernists such as Klee, Moore, Baumeister and Masson; and Yve-Alain Bois and Rosalind Krauss have recently undertaken an exhaustive study of the concept of the *informe* in 20th century art, I will not focus on these themes in this dissertation, though I will touch on them. See Lichtenstern in the Bibliography for references. For an approach that develops Bataille's take on the subject, see Yve-Alain Bois and Rosalind Krauss, *L'informe. Mode d'emploi* exh. cat. (Paris: Centre Georges Pompidou, 1996). The text is published in English in a special issue of *October* 78 (Fall 1996) and will appear as a Zone book as *Formless. A User's Guide*.

41. See the classic, if late (1953), formulation of his ideas on this in "The Question Concerning Technology," in Martin Heidegger, *Basic Writings*, David Farrell Krell, ed. (New York: Harper & Row, 1977), 283-317.

42. Klages, "Mensch und Erde," in Klages, *Mensch und Erde. Elf Abhandlungen* (Stuttgart: Alfred Kröner, 1973), 10, 12. On Klages as a pioneer environmentalist, see Roland Müller, *Das verzwestete Ich -- Ludwig Klages und sein philosophisches Hauptwerk 'Der Geist als Widersacher der Seele'* (Bern and Frankfurt/Main: Herbert Lang, 1971), 200-201 and Wilfried Kuckartz, "Ludwig Klages als Prophet der drohenden Umweltkatastrophe," *Hestia* (1982-83): 67-79.

43. On Darré, see Anna Bramwell, *Blood and Soil: Walter Darré and Hitler's 'Green Party'* (Bourne End, U.K.: Bucks, 1985). This concept, though without as strong an emphasis on ethnicity, has been revived in the 1970s by the "bioregionalists." On this, see Kirkpatrick Sale, *Dwellers in the Land: A Bioregional Vision* (San Francisco: Sierra Club, 1985). On Klages' and Francé's political development -- while the former refused Nazi party membership, there is evidence to suggest the latter did not -- see Chapter Two. For the view that anarchism and fascism are variants of a single category, "chiliasts," see Karl Mannheim, *Ideology and Utopia*.

44. Anna Bramwell, *Ecology in the 20th Century: A History* (New Haven: Yale University Press, 1989), 13-14.

45. Robert A. Pois, *National Socialism and the Religion of Nature* (London: Croom Helm, 1985), 10-11, 39.

46. *Ibid.*, 170.

47. See Ibid. Though Pois is not very familiar with the larger *geistesgeschichtlich* context of biocentrism, he does essentially say this: "What Hitler had done was to wed a putatively scientific view of the universe to a form of pantheistic mysticism presumably congruent with adherence to 'natural laws.' In this, he bore a marked resemblance to such Darwinians as Ernst Haeckel who.. informed their scientific endeavors with large doses of romanticism..." (pp. 39-40) Anna Bramwell argues that National Socialism differed from other European Fascisms in this respect, i.e. that the others were not nature-centric. Another nature-centric Fascist movement -- but one which did not achieve political power -- was that in England, which exercised an influence on British Modernists such as Wyndham Lewis, Ezra Pound and even D.H.Lawrence. See Bramwell, *A History of Ecology in the Twentieth Century*, Chapter Eight.

48. For an expression of this type of view, see Daniel Gasman, *The Scientific Origins of National Socialism: Social Darwinism in Ernst Haeckel and the German Monist League* (London: Macdonald, 1971).

49. Bramwell and Pois have begun to point out the commonalities between Nazi nature ideology and that of the environmental movement, which they both find disquieting. This continues to be a highly controversial subject. For a longer version of this discussion, see Chapter Two.

50. For an historical analysis of the role of biocentrism within Nazi ideology, see Pois, *National Socialism and the Religion of Nature*, e.g., p. 133.

51. Kállai, "Bioromantik," 272.

52. Ibid., 274.

53. Jackson Lears, *No Place of Grace: Antimodernism and the Transformation of American Culture, 1880-1920* (New York: Pantheon, 1981).

54. On the accelerating forces of modernization and of the anti-modernist reactive cultural forces in Germany, see, e.g., Anne Harrington, *Reenchanted Science: Holism in German Culture from Wilhelm II to Hitler* (Princeton: Princeton University Press, 1996), 19-33. Gianni Vattimo, *The End of Modernity: Nihilism and Hermeneutics in Postmodern Culture* (Baltimore: The Johns Hopkins University Press, 1988), 35-6. Adoption of the term "antimodernism" in the humanities would be unfortunate, because what Lears means, of course, is "anti-modernity." What art historians would term "Modernist" artists, especially during the *fin-de-siècle*, were almost without exception antimodernists in Lears' sense, as expressed in their "primitivizing" artistic practices of one kind

or another, and/or their anti-materialism, as expressed through "abstraction" in painting and sculpture. To avoid confusion, I will use "antimodernity" to refer to the expanded sense of Lears' term.

55. On the Nazis' Monism, see Pois, *National Socialism and the Religion of Nature*, 41-2.

56. While Kállai had associated with Leftists (including hard-core Communists) during most of the Weimar years, by 1929 his political position was both anti-Communist and anti-Fascist. For example, when writing of the art he would soon term *Bioromantik*, and which he valorized, he wrote: "Naturally [this art] will not enliven economic life, and it will not win over the masses either for Adolf Hitler's [National Socialist] or for Thälmann's [Communist] parties." "Vissza az ornamentikához" [Return to ornament, 1929] in Ernő Kállai, *Művészet veszélyes csillagzat alatt. Válogatott cikkek, tanulmányok* [Art under dangerous constellations. Selected articles and studies]. Éva Forgács, ed. (Budapest: Corvina, 1981), 143. On Benjamin and biocentrism, see Chapter Five, endnote 265. On Höch's biocentrism, see Chapter 2, endnote 14.

57. For overviews of this cultural trend between the wars, and for a clearer picture of why we are not dealing with reactionary Modernism here, see Jeffrey Herf, *Reactionary Modernism: Technology, culture, and politics in Weimar and the Third Reich* (Cambridge: Cambridge University Press, 1984) and Andrew Hewitt, *Fascist Modernism: Aesthetics, Politics, and the Avant-Garde* (Stanford, Ca.: Stanford University Press, 1993). See also Kenneth Silver, *Esprit de Corps: The Art of the Parisian Avant-Garde and the First World War 1914-1925* (Princeton, N.J.: Princeton University Press, 1989).

Seth Taylor, *Left-Wing Nietzscheans: The Politics of German Expressionism 1910-1920* (Berlin: Walter de Gruyter, 1990). For the analogous development of the Hungarian avant-garde, particularly the Activists, see, e.g., Júlia Szabó, "Ideas and Programmes: The Philosophical Background of the Hungarian avant-garde," in *The Hungarian avant garde: The Eight and the Activists* exh. cat. (London: Arts Council of Great Britain, 1980), 9-18.

Hartmut Nowacki, *Zwischen Lebensphilosophie und Stalinismus: Philosophische Ansätze in der Kommunistischen Partei Deutschlands (1918-1933)* (Munich: Profil, 1983).

58. Taylor, *Left-Wing Nietzscheans*, 230.

59. Stambaugh, *The Other Nietzsche*, 127-8.

60. *Ibid.*, 24.

61. *Ibid.*, 128-29.

62. Leo Steinberg, "The Eye is a Part of the Mind," *Partisan Review* 20, no. 2 (1953): 210. See also James Elkins, *Art Bulletin* (December 1995).
63. Dorner, *The Way Beyond 'Art'*, 88-91.
64. Robert Metzger, "Biomorphism in American Painting," (Ph.D. dissertation, University of California at Los Angeles, 1973), 11-12.
65. Read, *Education Through Art*, 16.
66. See Harry Robin, *The Scientific Image: From Cave to Computer* (Abrams: New York, 1992), 126-27. On New Look design and scientific imagery, see Chapter 5 of Jackson, *The New Look*.
67. I prefer the use of "organic metaphor" to "organic analogy" because the idea of the artwork as "growing" or having an existence or structure akin to that of an organism is metaphorical rather than strictly-speaking analogical. For an intelligent usage of the more traditional "organic analogy" in a related context, see Sherrye Cohn, *Arthur Dove: Nature as Symbol* (Ann Arbor: UMI Research press, 1985), 10-16. For a discussion of the "organic analogy" versus the "biological analogy," see Philip Steadman, *The Evolution of Designs: Biological Analogy in Architecture and the Applied Arts* (Cambridge: Cambridge University Press, 1979).
68. Walter Benjamin, "Neues von Blumen." Review of Karl Blossfeldt, *Urformen der Kunst, Die Literarische Welt* 4, no. 47 (23 November 1928). On this, see Chapter Five.
69. Wiedmann writes that "The emphasis with the organic theory shifted from a purely 'egocentric' explanation of artistic creation to a 'cosmocentric' understanding which strove to comprehend the being and function of art in relation to the universe and its creative ground." *The Romantic Roots of Modern Art* (Old Working, Surrey: Gresham Books, 1979), 148. José Argüelles uses the term "psychobiological" in reference to Charles Henry's "psychophysical" aesthetics. He writes of Henry's text of 1922 that "[Henry's] idea that art might be a regulated psychobiological projection of an unconscious nature... is unique." *Charles Henry and the Formation of a Psychophysical Aesthetic* (Chicago and London: University of Chicago Press, 1972), 14.) Wiedmann and others, however, have traced this theory back to the Romantics. We shall see that Kállai did not exclude the possibility of direct influence of scientific imagery on artists however; he was ambivalent on this count. Note that though Argüelles quotes Henry as employing the term "psychobiological" in 1922, Raoul Francé worked his own "Psychobiologie" out before the First World War already, borrowing the term from O. Kohnstamm's use of it.

This is discussed in Chapter Two, endnote 75. See also Robert Bud, *The Uses of Life: A History of Biotechnology* (Cambridge: Cambridge University Press, 1993), 61. On Lissitzky in this regard, see Chapter Four.

70. Wiedmann, *Romantic Roots in Modern Art*, 174-75.

71. M. H. Abrams, *The Mirror and the Lamp: Romantic Theory and the Critical Tradition* (New York: Oxford University Press, 1953), 187.

72. See Klaus Vondung, "Millenarianism, Hermeticism, and the Search for a Universal Science," in Stephen A. McKnight, ed., *Science, Pseudo-Science, and Utopianism in Early Modern Thought* (Columbia, Missouri: University of Missouri Press, 1992), 134-5.

73. Herder quoted in *ibid.*

74. Herbert Read, *Education Through Art* (New York: Viking, 1945), 16.

75. Siegfried Giedion, "Universalism and the Enlargement of our Outlook," in György Kepes, ed., *The New Landscape in Art and Science* (Chicago: Paul Theobald, 1956), 93.

76. On this subject see Astrit Schmidt-Burkhardt, *Sehende Bilder: Die Geschichte des Augenmotivs seit dem 19. Jahrhunderts* (Berlin: Akademie-Verlag, 1992), Chapter Five, "Blick durch die Lupe und das Fernrohr," esp. pp. 209-16; Jacques Bousquet, *Les thèmes du rêve dans la littérature romantique. (France, angleterre, allemagne). Essai sur la naissance et l'évolution des images* (Paris: Didier, 1964), 461-63; and Sarah Lynn Henry, "Paul Klee, Nature, and Modern Science, the 1920s," (Ph.D. dissertation, University of California, Berkeley, 1976), xii, 25. Redon was looking through a microscope in the late 19th century (Ritterbush, *The Art of Organic Forms*, 76; Metzger, *Biomorphism in American Painting*, 11-13; Douglas W. Druick et al., *Odilon Redon: Prince of Dreams, 1840-1916*, exh. cat., Chicago: Art Institute of Chicago, 1994, 137, 148-49) and Kubin in the early twentieth (Henry, "Paul Klee," 37, note 27). Arp, Klee, Ernst, Kandinsky, Miró, Moholy-Nagy, Moore and Tanguy are early Modernist examples. Ernst was using microscopic images in his collages as early as 1919. See Henry, "Paul Klee," 25. On Klee and microscopy in 1924, see Klee, *Notebooks, Volume 1, The Thinking Eye* ed. Jürg Spiller; trans. Ralph Mannheim (Woodstock, N.Y.: The Overlook Press, 1992), 93, 335. See also Klee, *Notebooks, Volume 2. The Nature of Nature* ed. Jürg Spiller; trans. Heinz Norden (Woodstock, N.Y.: The Overlook Press, 1992), 97. Kandinsky illustrated microscopic images in his Bauhaus book *From Point and Line to Plane* and was looking

through microscopes in the 30s (Hans K. Roethel, *Kandinsky*, Munich: Piper, 1982, 160-61; Vivian Endicott Barnett, "The Introduction of Biological Images in the Paris Period" in *Kandinsky in Paris: 1934-1944* exh. cat., New York: Guggenheim Museum, 1985, 61-87). Moore was doing so by 1934. (On him, see Chapter One.) Kupka "is thought to have used the imagery of microscopes as a source of some of his abstract compositions in the 1920s." (Jennifer Mundy, "Form and Creation: The Impact of the Biological Sciences on Modern Art" in *Creation: Modern Art and Nature*, exh. cat., Edinburgh: Scottish National Gallery, 1984, 18.) On Zeisel, see Eva Zeisel, "On Being a Designer" in: *Eva Zeisel: Designer for Industry* (Montreal: Le Château Dufresne - Musée des Arts Décoratifs de Montréal, 1984), 92. (Thanks to Gina Obrodzinsky for pointing this out to me.) On Gabo and the illustrations of D'Arcy Wentworth Thompson, see Martin Kemp, "Doing What Comes Naturally: Morphogenesis and the Limits of the Genetic Code," *Art Journal* 55, no. 1 (Spring 1996): 28-30. Kemp is uncertain about exactly when Gabo learned of Thompson's 1917 publication *On Growth and Form*, though he certainly did so by the time of his sojourn in Britain in the 1930s. I would suggest that Gabo's tendencies in this direction were grounded in a knowledge of the work of Raoul Francé, which Gabo would have encountered through Ernő Kállai, one of his closest friends in Berlin. On Kállai, see Chapter Five. On Moholy-Nagy, see Chapters Three and Four.

77. For example, in Alexander Klee's library in Berne, one finds among his grandfather, Paul Klee's books two school science texts, the richly-illustrated book by Fr. Polack et al., *Illustrierte Naturgeschichte der drei Reiche in Bildern, Vergleichen und Skizzen* (Wittenberg: R. Herrossé, 1887); and Karl Friedrich Hoffrath Hoffmann's *Die Erde und ihre Bewohner* (Altona: G. Kalman & Cie., 1877), inscribed "Paul Klee 1895" the second year of Klee's Gymnasium studies. On Klee's science instruction at Gymnasium, see Sara Lynn Henry, "Paul Klee's Pictorial Mechanics from Physics to the Picture Plane," *Pantheon* 47 (1989): 147, 163. (Despite her inquiry, Henry was not informed by Felix Klee about Hoffmann's book, nor was she told that Polack is a school text.) Polack includes illustrations of shells, natural spirals, fossils, crystals, amoebas, protists, the "Ur- oder Protoplasmatiere," growth systems of plants, etc., themes which recur in Klee's art. Hoffman's book includes meteorological material of relevance to Klee's later work. Thanks to Alexander Klee for allowing me access to his library.

78. C.f. also the scientist-photographer Oscar Prochnow. Little has been written on Prochnow, who figured as a scientific theorist and historian of Lamarckism in Adolf Wagner's *Geschichte des Lamarckismus als Einführung in die Psychobiologische Bewegung der Gegenwart* (Stuttgart: Franckh'sche Verlagshandlung, n.d. [1909]); and who reappears in 1934 as

the author of *Formenkunst der Natur* (Berlin: Ernst Wasmuth, 1934), one of the most beautiful examples of the close-up nature photograph genre of interwar Germany. In any case, in the tradition of Haeckel and Francé, he was a part of the Neo-Lamarckian or "Psychobiological" "Neo-Nature Philosophy" (what I will define as "biocentrism") of the early twentieth century, and of the drive to popularize close-up nature photography later on. For an indication of his biocentrism, see Prochnow's "Zur Einführung" in *Formenkunst der Natur*.

79. On Francé's *Biotechnik* see Bud, *The Uses of Life*, 60-63 and R. R. Roth, "the Foundation of Bionics," *Perspectives in Biology and Medicine* 26, no. 2 (Winter 1983): 229-242.

80. On the aestheticization of scientific photography and film in France, see Gladys Fabre, "Synthetic Art," in *Paris. Arte Abstracto, Arte Concreto, Cercle et Carré 1930* exh. cat. (Valencia: IVAM, 1990), 397 and Mundy, "Form and Creation," 17-19. On this and on Surrealism and nature in general, see Karin Orchard, ed., *Die Erfindung der Natur: Max Ernst, Paul Klee, Wols und das surreale Universum* exh. cat. (Freiburg in Bresgau: Rombach Verlag, 1994). On the naturamorphic analogy in England, see Chapter One.

Note, however, the important difference between the use of close-up photography in the Weimar German and Surrealist contexts, what Kállai would have called the contrast between the creative and demonic aspects of nature: "If we also find analogies between Brassai's disorienting close-ups of art deco ironwork, crystals, a potato with long antler-like sprouts..., all of which were... published in *Minotaure*, and certain photographs by Karl Blossfeldt or Renger-Patzsch, the formal resemblances leap out only when the photographs are removed from the cultural contexts in which they were produced. Blossfeldt's magnified views of plant forms in *Urformen der Kunst* and Renger-Patzsch's close-ups from *Die Welt ist Schön* (1928) emphasized formal structure and symmetries that evoked ideas of unity, harmony and universal order. By contrast, the Surrealists used such images, including Brassai's, to disorient the viewer and suggest the mysterious side of everyday objects." Marja Warehine, *Brassai: Images of Culture and the Surrealist Observer* (Baton Rouge: Louisiana State University Press, 1996), 11-12. The Purists' work was closer to that of the Germans. On the shift of the Purists' painting from geometric to organic forms, see Romy Golan, *Modernity and Nostalgia: Art and Politics in France Between the Wars* (Princeton, N.J.: Princeton University Press, 1995), 181, note 7.

81. See Robert Schmutzler, "Biological Romanticism," in his *Art Nouveau* (1962) (New York: Abrams, 1978), 207-12..

82. Other components, such as the artistic use of scientific imaging devices such as microscopes and x-ray machines, and the organic metaphor, are arguably independent elements, but for the sake of simplicity, they are either not treated or subsumed into the naturamorphic analogy here. Note also that other discourses such as anthropology (whence the term "biomorph" derives as I show in Chapter One) and other types of psychology such as Freudian and Jungian psychoanalysis interact with those discussed here to result in *Bioromantik*. For reasons of limits on my time and energy, I have chosen not to focus on them here.

83. Cohn, *Arthur Dove: Nature as Symbol*, 43.

84. Lawrence Bass Becking, foreword to the exhibition pamphlet of Edward Weston's show at the Delphic Studios, New York, October 1930. Quoted in: Beaumont Newhall and Amy Conger, eds., *Edward Weston Omnibus. A Critical Anthology*. (Salt Lake City: Gibbs M. Smith, 1984), 28.

85. Burnham, *Beyond Modern Sculpture*, 94.

86. On Scheler and *Vitalmystik*, see Chapter Two.

87. Cohn, *Arthur Dove: Nature as Symbol*, 3-4. On the subject of mysticism and science, see especially Chapter 3, "Theosophy: A Spiritual Focus," 45-6.

88. Le Corbusier, *L'art décoratif d'aujourd'hui* (Paris: Les Editions G. Cres et Cie, 1925), 127.

89. Dove, letter to Elizabeth McCausland, ca. 1936, quoted in Cohn, *Arthur Dove: Nature as Symbol*, 13.

90. Edward Weston, statement for an exhibition at the Museum of Fine Arts, Houston, May 1930. In: Peter C. Bunnell, ed., *Edward Weston on Photography* (Salt Lake City: Gibbs M. Smith, 1983), 61.

91. Wiedmann, *Romantic Roots of Modern Art*, 3.

92. C.f. Alloway: "Particular cases of resemblances are not interesting: the point is the identity of everything with its simultaneous phases of seeding, sprouting, growing, loving, fighting, decaying, rebirth." "The Biomorphic Forties," 20.

93. For a discussion of geometric abstraction as a form of Primitivism, see: Goldwater, *Primitivism in Modern Art* (1938). Second edition. (Cambridge Mass.: Belknap Press of Harvard University Press, 1966), 163-77.

94. On Schapiro's definition of "style," see Chapter One.

95. See, e.g., Jonathan Crary, *Techniques of the Observer* (Cambridge MA: The MIT Press, 1990), 23. See also James Elkins on this license, "Art History and Images That Are Not Art," *Art Bulletin* 77 no. 4 (December 1995): 553-571.

96. See the December 1995 issue of the *Art Bulletin*, "A Range of Critical Perspectives: Inter / disciplinarity" on this, with contributions by Carlo Ginzburg, James D. Herbert, W. T. Mitchell, Thomas F. Reese, Ellen Handler Spitz and Elkins' "Art History and Images That Are Not Art."

97. I disagree with Jonathan Fineberg that American artists such as Calder and Pollock did not share with Europeans a biocentric view of art. Fineberg writes: "Like Calder, Hans Hofmann provided an important bridge between European modernism and the new American avant-garde, although Hofmann retained a European sensibility that neither Calder nor the American-born artists of the New York School ever developed. This 'European sensibility' is difficult to define precisely, but it has to do with a conception of the artist as a vehicle for the forces of nature and indeed as inseparable from nature..." *Art Since 1940*, 52.

CHAPTER ONE

"Biomorphic Modernism" Historiography, Terminology, and Literature

[Style is] a system of forms with a quality and a meaningful expression through which the broad outlook of a group [is made] visible. It is also a vehicle of expression within the group, communicating and fixing certain values of religion, social, and moral life through the emotional suggestiveness of forms.... Style, then, is a means of communication, a language not only as a system of devices for conveying a precise message by representing or symbolizing objects and actions but also as a qualitative whole which is capable of suggesting the diffuse connotations as well and intensifying the associated or intrinsic affects.... Not the content as such, but the content as part of a dominant set of beliefs, ideas, and interests, supported by institutions and the forms of every-day life, shapes the common style. (M. Schapiro 1962)¹

Contemporary art historical research and criticism too often perpetuate the long tradition of borrowing their methodology from the outdated model of the discursive printed word. (B. Stafford 1992)²

1. Forms

Since Meyer Schapiro's semiotically-informed definition of "style" as *langue* was published in 1962, art historians have shown how the very manner in which a work of art is rendered can signify independently of the subject matter of the work, enriching possible readings of artworks beyond iconographic ones.³ As Richard Schiff writes: "Form ... [can] both represent and embody content, and not in any obscure or mysterious manner."⁴ While this revisionist art history was itself a reaction to formalist art theories, one must remember that it is also a direct outgrowth of them -- their revision as refracted through structuralism and semiotics, rather than a *volte face*. It is the most recent incarnation of formalist art historical and critical practice reaching back through Greenberg, Barr, Giedion, Barnes, Fry, Bell, Wölfflin and his

"history of the development of art based on form,"⁵ to Conrad Fiedler and Gottfried Semper. René Huyghe has traced the history of art historical theories about form:

A partir de Conrad Fiedler et de Hildebrand, certains penseurs s'attachèrent à la Forme, pour s'interroger sur son origine (que Semper crut technique, s'appuyant sur les arts décoratifs, ou elle est perceptible à l'état pur, mais que Alois Riegl fit dépendre d'une tendance intérieure, la *Kunstwollen*), ou sur ses lois organique d'évolution (Focillon ...); certains en renouvelèrent la psychologie (... la *Gestalttheorie*). D'autres préférèrent se pencher sur le contenu, et l'iconographie, de Male à Panofsky, en poursuivent l'étude aussi bien dans la traduction volontaire des idées que dans les révélations inconscientes.⁶

Huyghe developed a complex, synthetic approach to form which involved several of these approaches. The Goethean and Bergsonian morphological-organicist, or "functional" vein of formalism in the work of the architectural historians Adolf Göller and Siegfried Giedion, the zoologist Alfred Haddon, the art historian Henri Focillon, his student George Kubler, and the archaeologist David Clarke, holds that forms develop parallel to "natural" phenomena and much like them.⁷ As Jean Molino articulates it:

artistic creation, like all creation, is production about and based on the forms transmitted by tradition; the artist stores inherited forms and elaborates his or her own forms in a dialogue with forms from the past. As a result, these new forms bear the ... traces of the old forms among which they take their place.⁸ There are ... two significations that adhere to form: a specifically formal [one] that is allusion to other forms, and a nonformal ... [one] always present, but whose relation to form is largely arbitrary.⁹

This morphological-organicist vein is particularly relevant here because it partakes of the organic metaphor of art held by many of the artists and critics dealt with in this dissertation, an "organicism" which M. H. Abrams defined "as the philosophy whose major categories are derived metaphorically from the attributes of living and growing things."¹⁰ This

aesthetic isomorphism assists us in understanding biomorphic artistic and critical production, but at the same time it potentially hinders us by rendering impossible a critical meta-analysis. I will both incorporate and critically examine aspects of this approach.

Formalisms raise questions about classes of forms and their significations. They are useful in thinking about histories of form *qua* form. They are particularly useful in understanding how the forms of "abstract" art signify, and what they signify, and can usefully supplement -- rather than replace -- iconographic and contextual approaches to the study of abstract art.¹¹ Finally, they are helpful in resisting discrimination among media of production, for as Jonathan Crary (working within a rich tradition of art historical practice) has shown,

The isolation of painting after 1830 as a viable and self-sufficient category for study becomes highly problematic, to say the least. The circulation and reception of all visual imagery is so closely interrelated by the middle of the [19th] century that any single medium or form of visual representations no longer has a significant autonomous identity.¹²

A study of Modernism which excludes popular, scientific, occult or other visual manifestations of modernity is untenable.¹³

Formalist approaches underline the need for the further development of what James Elkins calls "image studies" and what Barbara Maria Stafford has termed a "pictology":

Uncritically to ally ourselves with those who treat actions and pictures merely as decodable texts or as some ignoble form of knowing will not reduce uncertainty and not guarantee the production of more rigorous research. The moment has come to forge theoretical models congruent with the showing and demonstrative nature of the fleeting appearances under investigation.... Figures must cease being taken for *parerga*. Rather than disposable accessories hovering on the intellectual margins, they must become integrated into, and shape, the mainstream of civic life.¹⁴ No longer defined as subjugated illustrations, or just better conveyers of extant verbal

information, images would be recognized as free agents needed to discover that which could not otherwise be known.¹⁵ The new-found power and ubiquity of images calls for teaching innovations and for altering venerable, but unexamined, epistemological models and textual metaphors ("codes", "alphabets", "letters", "spelling", "grammar").¹⁶

Just as visual culture vies with textual culture for communicative dominance, visual means of analysis are as important as text-based, thematic and iconological ones. We can build on traditions of visuality already present in the discipline.¹⁷

A morphological approach such as Kubler's would recognize what he terms a "formal sequence"¹⁸ of "biomorphic abstraction" extending back to the dawn of image-making. An awareness of such a sequence -- as sketched out by the former director of the Landesmuseum in Hanover, Alexander Dorner,¹⁹ and René Huyghe, who called it *l'esthétique de la sinuosité* and *formes fluide*²⁰ -- is important for placing 20th-century biomorphic abstraction into its formal historical context: that (moving in reverse) of Expressionism, the Art Nouveau,²¹ aspects of Symbolism and Romanticism, the Rococo, the Baroque, Flamboyant Gothic, Islamic art, Scandinavian and Hiberno-Saxon art, and so on down to Minoan art and Alfred Haddon's "biomorphs" on prehistoric pottery shards.²² Such a regression makes one aware of the formal pedigree of what one is dealing with, and it is useful for that reason, even if it is not helpful in framing a subject of study, for it renders it vast. It also lends legitimacy to the formalist framing of Modernism devised by the long-time Museum of Modern Art director Alfred Barr, a framing which dominated the discourse for decades -- and so is familiar to art historians -- even if it has been in disrepute of late. Though the problematic of the art we are dealing with could be approached from either the thematic or formalist angles, I begin here with a formally-defined category by laying the groundwork for the examination of art which bears the labels "biomorphic," "organic," "organ-ic abstract," and "biomorphic abstract."²³ These signifiers, deriving from the

terms "biomorph" and "organism," denote a style familiar to students of early 20th-century Modernism.

This category, as defined by Barr and his successors, includes not only "abstract" images but also art -- usually Surrealist -- which is derived from or still contains recognizable imagery. Therefore, *unless I am engaged in terminological history, I will employ the more generous "biomorphic Modernism" to refer to Barr's formally defined category.*

"Biomorphic Modernism" has the advantages not only of including both mimetic and "non-mimetic" biomorphic work produced within the discourse of Modernist art, but of acknowledging that discourse as well. I propose that biomorphic Modernism is a style in Schapiro's complex sense, a formal and connotational language determined by its context, and that the style of biomorphic Modernism can more precisely and suggestively be referred to as "Bioromanticism."

2. Frames

The usefulness of the concept of style is that it establishes a unity where there is apparently no unity, but the artistic coherence of the works concerned is greater than their divergence from each other. (Hauser 1965)²⁴

And it is only the destining into objectifying representation that makes the historical accessible as an object for historiography. (Heidegger 1953)²⁵

If I hadn't believed it with my own mind, I never would have seen it. (Bard College graffiti 1951)²⁶

Hauser points to a basic problem of art history, that of taxonomy. In "Frames" I will first examine the history of taxonomical terms and categories used in connection with biomorphic Modernism, after which I will engage in a discussion of such "frames," proposing finally a framing model for use.

a. Read, Worringer, and the "Organic"

Within the discourse of Modernism the term "biomorphic abstraction" seems to have been first employed in London around 1934 in the "Unit 1" circle around the biocentric anarchist²⁷ critic Herbert Read and the journal *Axis*.²⁸ Read's involvement with biomorphic Modernism was as complicated and problematic as his theoretical approaches to art were,²⁹ and this prevented him from playing the role one might otherwise have expected him to play in the adoption of "biomorphic" into the artistic vocabulary. Indeed, it was not Read, but the critic, poet and editor Geoffrey Grigson who introduced the term "biomorphic" to the discourse of Modernism.

In the early 30s, when Read started writing and publishing on contemporary art, he was indebted intellectually to Wilhelm Worringer,³⁰ whom he eventually befriended and referred to as his "esteemed master in the philosophy of art."³¹ In his 1908 dissertation *Abstraction and Empathy*, Worringer -- inspired by the ideas of Theodor Lipps, Alois Riegl, and his teacher Heinrich Wölfflin -- proposed the binary psychological theory of artistic production, that human mental abstraction gives rise to geometrical abstract art, while empathy is the impulse for naturalistic or "organic" art. Though Worringer's dissertation functioned as both theory and legitimizing force for Expressionist (including abstract) art in the teens, it has not often been remarked that his schema, like all (of necessity, reductionist) conceptual structures (including my own), has its limitations, its problems with "fit." Jack Burnham is one of the few commentators to point out the limitations of Worringer's work: "By nature art historians are pattern-creating creatures, and patterns abound in art history; but, like so many broad conceptions, they begin to show serious flaws when applied to specific cases."³² Thus, Worringer's identification of naturalism with the organic, and his linking of this category with empathy and the art of certain historical periods, does not easily allow

for naturalistic art among some ancient peoples, e.g. palaeolithic cave painters and the ancient Minoans,³³ nor for organic abstraction at all, much less among the moderns.

Sensing this as a difficulty, Worringer engaged in an ingenious argument which recast organic abstraction as naturalism in disguise. He argued that organic abstraction was not the result of the "organic analogy" (what I here term the "naturamorphic analogy"), of abstraction from forms of organic nature. Rather, he maintained, it was the result of the organic metaphor, in other words that it was developed according to the laws of creation in nature. By this means he removes organic abstraction from the realm of abstraction and returns it to the domain of naturalism:

It then becomes immediately apparent that organic regularity, even when represented in the abstract, has a milder effect upon us and is more closely bound up with our own vital sensations. It makes a stronger appeal to the activation of these vital sensations of ours, and is thus calculated gently and gradually to entice out man's latent impulse to empathy.³⁴

The fact that some organic abstraction is based on the naturamorphic analogy did not enter into Worringer's argument.³⁵

The -- in effect -- inability of Worringer's dual structure of impulses to account for what by the late 20s had developed into the style of biomorphic Modernism seems to have affected Read, who was so enamoured of Worringer's writings that he learned German to be able to read them in the original.³⁶ Partly because he felt that abstraction was not useful enough socially, and partly because of his adherence to Worringer's schema, Read was ambivalent about the abstraction of his contemporaries. This ambivalence was expressed as a concurrent critical valorization and theoretical denigration of biomorphic Modernism. Thus, though Read had published a book on Surrealism by 1936, in 1934 he wrote dismissively of what was in effect biomorphic Modernism as an "*enfant terrible*" born of the "foster-mother" Surrealism.³⁷ In 1937 he deflected

his argument from the aesthetic to the social plane, criticizing abstract art's apparent lack of social utility.

The claim -- of the abstract artist is that the forms he creates are of more than decorative significance in that they repeat in their appropriate materials and on their appropriate scale certain proportions and rhythms which are inherent in the structure of the universe, and which govern organic growth of the human body. Attuned to these rhythms and proportions, the abstract artist can create microcosms which reflect the macrocosm -- he can hold the world, if not in a grain of sand, then in a block of stone or a pattern of colours. He has no need of natural appearances -- of the accidental forms created in the stress of the world's evolution -- because he has access to the archetypal forms which underlie all the casual variations presented by the natural world. I do not doubt myself that the abstract artist is sincere in this claim, and that he does achieve ... what he attempts. The only point in doubt is the social relevance of this activity.³⁸

While this text demonstrates that ideas first evident in Kállai's "Bioromantik" in 1932 were being more widely expressed, it also reflects the political argument with the artists' positions.

b. Unit 1

Putting aside Read's ambivalence for a moment, we might note that his criticism included the first, and indeed until now the most cogent, summary written in English of what was in effect Bioromanticism. It reflected the ideas and aims of the Modernists who had emerged around Read, a circle of artists interested in the expression of their Organicism and their Vitalism, "the force that through the green fuse drives the flower," as Dylan Thomas expressed the *élan vital* in his poem of 1933-34.³⁹ Formally inspired by the biomorphic Modernist work of Constantin Brancuși, Pablo Picasso, Alberto Giacometti, Joan Miró and Hans Arp, and frank concerning their desire to express natural forces and their interest in (abstracted) natural forms, members of Read's circle such as Barbara Hepworth, Henry Moore and Paul Nash, were producing work in a

biomorphic abstract style, which, along with Grigson, Read was the first to admire.⁴⁰

That Read's summary accords with the artist's views is easily verifiable. In *Unit 1* Hepworth wrote that "[i]n the contemplation of nature we are perpetually renewed ... and rightly understood, it gives us the power to project into a plastic medium some universal or abstract vision of beauty."⁴¹ On another page Moore declared that "[b]ecause a work does not aim at reproducing natural appearances it is not, therefore an escape from life -- but may be a penetration into reality ... an expression of the significance of life."⁴² While Read was not specific concerning the artist's formal sources in his 1937 text, Moore specified natural objects such as pebbles, rocks, bones and shells as formal inspirations for his work, and he noted that "the telescope and microscope have enlarged the field from which the sculptor can enlarge his form-knowledge experience."⁴³

The popularization of the naturamorphic analogy in the Unit 1 circle was fuelled by the appearance in 1929 and 1932 respectively, of English editions of Karl Blossfeldt's collections of close-up nature photographs *Kunstformen der Natur* and *Wundergarten der Natur*,⁴⁴ the exhibition of Blossfeldt's photographs in London at the Zwemmer Galleries in 1932, and by the appearance in 1935 of W. Watson-Baker's book of artistic microphotographs, *World Beneath the Microscope*. While the publication of *Art Forms in Nature* by Zwemmer in 1929 was too early to elicit a response from the people who came to make up the Unit 1 circle, the 1932 publication of *Wundergarten der Natur*, and Robert Wellington's installation of Blossfeldt's photographs from *Wundergarten* in direct juxtaposition with examples from the applied arts,⁴⁵ stimulated R. H. Wilenski and then Paul Nash to speculate on the relations between contemporary art and natural forms.⁴⁶

The captions in Watson-Baker's *World Beneath the Microscope* were particularly pertinent, for example that under a

photograph of a sea urchin shell which, evidently referring to the work of Moore and Hepworth, pointed out that "the modern sculptor must envy the massiveness of form, the grandeur of contour, of this small shell."⁴⁷ William Gaunt's introduction to the book discussed the naturamorphic analogy within a biocentric framework:

[i]n all of this there is something abstract, something of the essential nature of things.... The artist feels what the scientist calculates. As serious writers have abandoned the superficial devices of the picaresque novel ... the visual artist is urged to exchange the delineation of outward appearance for a nearer examination of form. The symmetrical exemplars of text-books on design prove to be of the utmost banality when compared with the enormous repertoire of designs in nature, a dimensional book which discloses repertoire within repertoire, cosmos with cosmos. We turn over the page which illustrates obvious symmetries and regularities; we scent more vital stuff in a new series overleaf of designs that man has only faintly conceived, in whose prodigal scrawls the restless motion of primary life sketches an unprecedented art. The artist will not painfully copy this new world, but he will be the more an artist for seeing it....⁴⁸

In his review, John Piper found it "amusing ... to notice the artists suggested by the photographs: Klee (anchors and plates of Synapta), Ernst (a great many times), Miró (sponge spicules), Giacometti (chemical crystals), and so on."⁴⁹ Even though Blossfeldt's photographs were taken with a close-up lense rather than a microscope, in the advertisement of that same year (1935) for the second printing of Blossfeldt's *Art Forms in Nature in Axis*, the unidentified copywriter referred to "A series of excellent photographs of plant forms seen through the microscope, displaying the relationship between art and natural phenomena."⁵⁰ Just as, writing of contemporary Paris, Man Ray remembered that "all abstract art appeared to me as fragments: enlargements of details in nature and art," in *Axis* in 1936 S. John Woods wrote that "[a]ll so-called abstract pictures are based in some degree on nature or ... on the artist's selection of certain phenomena of nature."⁵¹

Grigson emphasized the naturamorphic analogy in his 1944 monograph on his friend Henry Moore, producing the earliest critical text I know of in English to discuss biomorphic Modernist art systematically in conjunction with contemporary biology, Vitalism and the scientific image analogy:

Moore ... is interested in the rounded, solid shapes into which life builds itself. And when he came back from Italy [in 1925], Moore became a pilgrim ... to the Natural History Museum.... [H]e now saw life in its natural forms and framework, from the cells to the skeleton.... [E]arly peoples ... saw life in the form of large organisms, brute or man. We see it also in the plates and diagrams of a biological text-book. Rounded shapes by Moore may be related to a ... bone, or a hill But they might also relate to the curves of a human embryo ... or to a single-celled primitive organism. Revealed by anatomy or seen with a microscope, such things are included now in our visual knowledge. Art, or the forms of art, change with such knowledge. So when some critics ... talk ... of the distorted vision ... of contemporary art, they are ... showing the restriction of their own experience.... Biology must also be acknowledged....⁵²

By 1945 Read was also espousing a psychobiological explanation of the artists' biomorphic forms: "the elementary forms which men have instinctively given to their works of art are the same as the elementary forms which exist in nature"⁵³.

As early as 1934 Nash and Grigson were calling for the production of nature-centred biomorphic Modernist art, i.e. Bioromanticism. To my knowledge, they were the only art professionals at the time to actively promote such art.⁵⁴ While Nash held that "[a]part from the world of 'pure' invention free from association with recognisable objects, I have no doubt, that the infinite variations of nature may be resolved with an equally incalculable number of complete abstractions," Grigson wrote:

Abstract art at this time needs ... to be penetrated and possessed by a more varied affective and intellectual [sic] content. Only so can it answer to the ideological and emotional complexity of the needs of human beings with their enlarged knowledge of the

widened country of self. Certain artists have already realized this in their practice; abroad Picasso and Brancusi, Klee, Miró and Héliou; in England Wyndham Lewis and Henry Moore. Abstractions are of two kinds, geometric ... which leads to the inevitable death; and biomorphic. The *biomorphic* abstractions⁵⁵ are the beginning of the next central phase in the progress of art.⁵⁶

This is the kind of art, added Grigson in another article of 1935, "which in my belief [people] will most enjoy."⁵⁷

It was possibly as a result of his political evolution, and his adherence to Worringer's schema, that, while he always knew of the Vitalist, i.e. biocentric, background to biomorphic Modernism, it was not until 1951 that Read conceptualized Vitalist biomorphic Modernism as a *category* of artistic production.⁵⁸ Furthermore, it was only at the end of his career, in the 1964 *A Concise History of Modern Sculpture*, that he discussed it, albeit only with respect to sculpture.⁵⁹

c. Grigson's "Biomorph"

Though informed through Read of Worringer's binary system of artistic impulses,⁶⁰ Grigson was clearly not satisfied with the problematic nature of Worringer's use of "organic" in relation to naturalistic and abstract art, and its inability to account for contemporary Modernism. Aware that Moore employed Worringer's term "organic" to refer to his abstract works,⁶¹ around 1934 Grigson proposed instead the adoption of the term "biomorphic" from an unnamed anthropologist who employed it in relation to the painted pebbles of the prehistoric Azilian culture:⁶²

The designs on the coloured Azilian pebbles ... have been divided by one anthropologist into two classes, designs produced by the more or less obvious abstraction of natural forms (such as the human figure) and "biomorphic" shapes ...⁶³ [which are] ... further from the originals.... "[B]iomorphic" ... is no bad term for the paintings of Miró, Héliou, Erni and others, to distinguish them from the modern geometric abstractions and from rigid surrealism.⁶⁴

In this passage and in his "Comment on England," Grigson grouped automatic Surrealism (Miró) and the biomorphic abstract members of Abstraction-Création (the French Jean Hélion and the Swiss Hans Erni) together -- along with related artists such as Picasso, Brancusi, Klee, Lewis and Moore -- to form a category of biomorphic Modernism, as distinguished from both geometric abstraction (represented by members of Abstraction-Création) and "rigid" -- by which Grigson evidently meant "oneiric" -- Surrealism.⁶⁵ "Such pictures as those of Klee" writes Grigson that same year "are examples of the Bergsonian return to pure nature."⁶⁶

As Gladys Fabre has pointed out in her article "Art de Synthèse," Grigson's formulation is a variant of that which gave rise to the 1935 exhibition *these antithese synthese*, held at the Kunstmuseum in Lucerne, and curated by Hans Erni.⁶⁷ This exhibition was part of a wider discourse of the time, one which attempted to overcome the apparent antinomy between "abstraction" and Surrealism.⁶⁸ Erni himself was a young Swiss artist with biocentric views and an intense interest in microscopy and the natural sciences.⁶⁹ Focusing on contemporary Parisian, Swiss and English art, and guided by the Organicism of Jean Hélion and the dialectical thinking of the Parisian critic Anatole Jakovski and the Swiss Marxist cultural philosopher Konrad Farner, Erni saw contemporary Modernism as the result of a dialectic.⁷⁰ Thus, according to Erni, Cubism and Dadaism together gave rise to Purism, and contemporary *art concret*, or *Art de Synthèse* (most of which was biomorphic Modernist⁷¹), was the synthesis of the thesis Abstraction-Création and its antithesis Surrealism.

All this recapitulated Kállai's argument put forward in a series of articles of the early 1930s, that biomorphic Modernist art expressive and/or reflective of our essential rootedness in "nature" ("*Bioromantik*"), and (mainly Constructivist art) expressive of a "rationalistic-materialistic-utilitarian" drive to build ("*Technoromantik*"), were artistic

embodiments of the essential Klagesian dialectic of *Seele* and *Geist*, a pair of polar opposites identifiable as "nature" and "construction" already in his Constructivist writing of the early 1920s.⁷² As he wrote in his 1932 article "Zurück zum Ornament," as parts of a single dialectic, "Eine internationale Ausstellung bewies doch, wie sehr Abstrakte und Surrealisten zusammengehören, auch wenn sie in gewissen Sinn feindlichen Brüdern gleichen."⁷³

Though Grigson's framing is tighter and his Vitalism more obvious, an undercurrent of biologicistic nature-centrism (what I term "biocentrism") is also present in the Lucerne formulation: The Lucerne Museum's director Paul Hilber asked Farner to assemble a bibliography for the catalogue of *these anti-these synthese*, including a section on "Mathematics" which Farner also described as having to do with the "natural sciences."⁷⁴ Mostly it contained titles to do with the contemporary Organicist concern for regularity and structure in nature.⁷⁵ Though his writing reflects the more poetic sensibility of Paris Surrealism and of French writing in general, this biocentric undercurrent is also present in Jakovski's texts of the time, including the exhibition essay for the catalogue.⁷⁶ All these formulations, Read's and Grigson's as much as Kállai's, and Erni and Jakovski's, viewed contemporary art as concerned with revealing deeper layers of reality through a formal language of biomorphic Modernism.

d. Haddon's "Biomorph"

No doubt referring to Grigson's book on the subject, *The Painted Caves*, Ian Jeffries has commented that "[l]ike his contemporaries [Grigson] was interested in antiquity, in flint axes and bronze-age barrows."⁷⁷ Hence we can assume that he was familiar with the literature on prehistory. But the anthropologist from whom Grigson derived his use of the term "biomorphic" was not likely the English Darwinian zoologist-turned-anthropologist Alfred Cort Haddon, who in his 1895

cultural anthropological treatise *Evolution in Art*⁷⁸ coined the term "biomorph," for Haddon does not discuss the Azilian culture, and he does not distinguish terminologically between more and less abstract naturalistic art.⁷⁹ In this book Haddon wrote that "The biomorph is the representation of anything living[,] in contradistinction to the skeuomorph, which ... is the representation of anything made ["such as a pattern based on weaving, wattling, binding, or timbering"], or the physicomorph which is the representation of an object or operation in the physical world."⁸⁰ Employing Vitalist terminology, Haddon emphasized that "[t]he fact that there is life in the original of the biomorph appears in most cases to exert an influence on the biomorph itself, so that it comes to have what might almost be described as a borrowed vitality."⁸¹ Indeed, in his discussion of biomorphs Haddon devoted an entire section to the "Representation of Abstract Ideas of Life," in which he specified that "[e]ven such an abstract idea as the Principle of Life, or Vital Energy, has been indicated in [certain motifs of biomorphic] decorative art."⁸² Unlike Worringer, Haddon was not confined by a binary psychological taxonomy and so could include both naturalistic and "abstract" patterns in his category.

That the term "biomorph" was coined by a zoologist working on visual culture, to refer to a style of abstraction representing vital forces and natural processes, is of no small importance: this is precisely what I -- following the contemporary critics Kállai and Carola Giedion-Welcker, and the artists themselves -- argue is the dominant signification of the forms, the style of biomorphic Modernism. Vitalistic content was present in the very coinage of "biomorph," before its adoption by anglophone Modernists, they are embedded in it. Vitalist meanings, if we might read Haddon in a Kublerian sense, are innate to the "formal sequence" of biomorphism. Had Grigson taken "biomorph" directly from Haddon, he would have known this. As a follower of the arch-Vitalist Wyndham Lewis

however, Grigson would likely have used it in a vitalist sense irrespective of Haddon's intent.⁸³

e. Barr's "Biomorph"

Given the predominantly formal usage of the terms "biomorphic" and "organic" today, it is not surprising that as epithets of an autonomous stylistic category of artistic production (biomorphic Modernism) they were popularized within the formalist critical paradigm of Modernist American aesthetics despite their Vitalist and *naturromantisch* origins, and Grigson's earlier Vitalist adaptation. This current usage, furthermore, derives from the institutionally most powerful line of formalism, that established by curator-scholars associated with the Museum of Modern Art in New York. With his Wölfflinian flow chart of Modern artistic tendencies and movements published in *Cubism and Abstract Art* in 1936, MOMA director Alfred Barr established a taxonomical system, a *framing structure*, which dominated the field of Modern Art for decades.⁸⁴ (Fig. 1-1) In this teleological system he included the category "Non-Geometrical Abstract Art" along with "Geometrical Abstract Art" as the twin resultants of his artistic vectors.⁸⁵ Barr's nomination of the former as the negative of the latter indicated the resultant to which he -- in accordance with Worringer -- accorded primacy at the time, the "first and more important current" of Geometric Abstract Art.⁸⁶ This is how Barr defined Non-Geometric Abstract Art:

After running under ground [sic] for a few years [this current] reappears vigorously among the masters of abstract art associated with Surrealism. This tradition ... is intuitional and emotional rather than intellectual; organic or biomorphic rather than geometrical in its forms; curvilinear rather than rectilinear, decorative rather than structural, and romantic rather than classical in its exaltation of the mystical, the spontaneous and the irrational.⁸⁷

Since he (or Beaumont Newhall, his bibliographer) lists *Axis* but not *Evolution in Art* in the bibliography of *Cubism and*

Abstract Art, we must assume that Barr's usage of the term "biomorphic" to describe non-geometric abstraction derives from Grigson. Barr's conflation of "biomorphic" with "organic" betrays his ignorance of the finer points of Worringer and the problems surrounding the use of the term "organic" in conjunction with "abstraction." While Barr's recognition of "romantic," "mystical," "spontaneous" and "irrational" content in the style indicates his resistance to a totalizing formalist interpretation,⁸⁸ his definition, like the rest of the book, does privilege form. Barr's understanding of the content derives not so much from Grigson, as from Worringer's *Abstraktion und Einfühlung* and its binary conception of the psychological impulses underlying art-making. Apparently ignorant of Haddon's Vitalist understanding of "biomorph," Barr must have been aware that Worringer discussed the content of "intuitive," "organic" art as Vitalistic and Pantheistic.⁸⁹ Either Barr was untroubled by Worringer's opposition of the organic to the abstract, or he accepted the German's way out of this dilemma. In any case, his description of the organic as "mystical" and "irrational" had pejorative overtones and Vitalist content tended to be denigrated or repressed in the discourse that Barr established.

As a pioneering historian and keen observer of the contemporary art scene, however, Barr correctly recognized later in the book that "[a]t the risk of generalizing about the very recent past, it seems fairly clear that the geometric tradition in abstract art ... is in the decline.... The non-geometric biomorphic forms of Arp and Miró and Moore are definitely in the ascendant."⁹⁰ In fact, within a few years he came to champion such art, organizing with James Johnson Sweeney retrospectives of Miró's and Klee's work in 1941.⁹¹ As Sandler has pointed out, these exhibitions had a strong effect on the emergent American "biomorphic" avant-garde, Abstract Expressionism,⁹² and thus made it possible for a critic such as Parker Tyler to emerge, who emphasized biocentric meanings and

the naturamorphic analogy in his reading of American biomorphic Modernism. In a 1945 critique of Sidney Janis' Barrian dualist conception of American Modernist art, Tyler constructed an understanding of biomorphic Modernism as insightful and complex as that of his European contemporaries:

"...abstractionism spontaneously developed its own variety of surrealism, wherein its analytical and geometrical forms 'come alive,' return to 'nature' by way of human fragmentation, life under the microscope, and the visceral -- in short, through what is known as biomorphism."⁹³

Nevertheless, Barr's prejudice against acknowledging Vitalist meanings in biomorphic Modernism was reproduced in his later work, and in that of most other critics, even in the writings of his critic Meyer Schapiro. In a 1937 critique of *Cubism and Abstract Art* and of abstraction in general, Schapiro received Barr's deemphasizing of content in abstraction as a true statement of the supposed lack of intention on the part of all abstract Modernists to signify with their works. This conflation of the truly formalist or "concrete" abstractionists with those who did wish to convey meaning blinded Schapiro to Vitalist content in biomorphic Modernism, encouraged him to believe that all abstract artists had rejected the "natural,"⁹⁴ and set up a straw man that it was then easy for him to knock down. He then read the rise of biomorphic Modernism and Surrealism as a consequence of the current pessimism of Western society, forgetting that such work had been produced at least since the mid 20s:

During the [present] crisis the mechanical abstract styles have become secondary. They influence very few young artists, or they tend toward what Barr calls "biomorphic abstraction," of a violent or nervous calligraphy, or with amoeboid forms, a lowgrade matter pulsing in an empty space. An anti-rationalist style, Surrealism ... becomes predominant, and beside it arise new romantic styles....⁹⁵

By positing a merely contextual, political significance to emergent biomorphic Modernism, Schapiro's article, in dialectic-

tical relation to Barr's book, further served to exclude from the dominant discourse any discussion of content in Modernism.

f. Organic/Biomorphic; Curvilinear/Crystalline

Though Barr used them easily and interchangeably, "organic" and "biomorphic" are not unproblematic terms. The use of "organic" goes back to the mid 18th century⁹⁶

and is rooted in Nature Romanticism. The term was probably first applied to art in the early 19th century, in relation to architecture.⁹⁷ Properly used, "organic" implies the genesis of the object it is applied to, as well as its structure, both senses of which refer to a biological metaphor, and imply a holism, that is the idea that the whole amounts to more than the sum of its parts.⁹⁸ "Organicism," an intellectual tradition going back to the 18th century, intersects with biocentrism in the early 20th. Its relations to Vitalism have been controversial, and some, like the biological philosopher Hilde Hein, have argued that Vitalism and Organicism are, despite their apparent differences, identical. As Donna Haraway puts it, "Hilde Hein argues that Organicism must be considered a modern variant of vitalism and that the old categories of mechanism and vitalism are still very much relevant to the contemporary biological scene."⁹⁹

The *Oxford English Dictionary* defines "biomorph" in Haddon's anthropological sense as a "decorative form representing a living object," while *Webster's* defines "biomorphic" in a manner which suggests more its usage by the American Modernists as "resembling or suggesting the forms of living organisms."¹⁰⁰ As we have seen with Barr's identification of the biomorphic/organic with curvilinearity in opposition to "geometric abstraction" and its rectilinearity, in common usage "biomorphic" and "organic" had by the 1930s taken on the connotation of curvilinear as opposed to rectilinear or orthogonal form. As demonstrated by Herbert Christian Merillat's text, this is the popular understanding of these terms,

despite the evident tensions:

Visible nature, by and large, favors curves. There are, to be sure, some natural angled shapes, especially in inorganic matter -- in certain geological formations, for example, and in mineral crystals. And, at a microscopic level, we find such angled forms as living diatoms and the structure of inorganic snowflakes. Generally ... when we see with unaided eyes a true straight line or an angular flat form or a solid with plane surfaces meeting at angles (a polyhedron), we can be fairly certain that humankind has been at work.¹⁰¹

Goldwater also defined the category in this formal sense:

The curve, whether of line or surface, is basic to [all these biomorphic sculptures]: it constitutes the sole, or the dominant, formal language employed. Besides, these forms, whether they define more or less stylized representations, or are altogether nonrepresentational, are seemingly more organic than geometric. Either they are obviously derived from the shapes of living forms, or, being abstract, they still have the tightness, the tension, the apparent pull from within, limiting extension, that brings to mind organic structure.¹⁰²

This is an old prejudice. Not only did artistic styles based on plant and animal forms such as the Rococo and Art Nouveau feature curved forms, the early-19th-century German *Naturphilosoph* Lorenz Oken theorized that the ideal shape of living things, even at the most microscopic level, was the sphere: "The sphere was the most nearly ideal of the forms of transcendental morphology, and, according to that system of beliefs, its shape served to distinguish living nature from crystal growth."¹⁰³ This view was confirmed in the best-known exhibition demonstrating the scientific image analogy, *Kunst und Naturform*, held in Basel in 1958. Writing in the book published on the basis of the exhibition, Georg Schmidt observed that the geometrical abstract paintings in the show tended to correspond to microscopic photographs of inorganic matter, and that the "tachist" abstract or "Non-Representational Painters" (i.e. mostly post-war biomorphic Modernist paintings) resembled the organic micrographs.¹⁰⁴

And yet Ernst Haeckel, the most important popularizer of scientific illustrations among artists and their promoter as normative models of art production, had complicated this picture in two ways. First, in his crucial album *Kunstformen der Natur* of 1899-1904, he showed how exquisitely *geometric* life forms such as diatoms could be at the microscopic level, even if such geometry itself favoured linear geometry inscribed into globular configurations.¹⁰⁵ For another, as a radical Monist who preached "the essential unity of organic and inorganic nature,"¹⁰⁶ he was concerned with the blurring of boundaries, the establishment of a continuum, between the "organic" and "inorganic," the "animate" and "inanimate," by demonstrating the commonalities of lower life forms with crystals, particularly structural and formal commonalities. "We cannot draw a sharp line of distinction between these two great divisions of nature, any more than we can recognise an absolute distinction between the animal and the vegetable kingdoms, or between the lower animals and man."¹⁰⁷ Late in his career, as a Monist with decidedly Vitalist, indeed Pantheistic inclinations, he was concerned with explaining these similarities by positing animating "souls" both in organic and inorganic phenomena.¹⁰⁸ As Holt points out, in his 1917 book *Kristallseelen* Haeckel "concentrated on the 'interior qualities' of crystals and extended [his] 'chain of unity of sensation' to the inorganic world. [He] referred to 'atomic souls' in inorganic matter such as crystals. Crystals were, he wrote, similar to organic forms of life in that they experienced birth, growth, death, sensation and all 'other manifestations of life-forms.'"¹⁰⁹ As Haraway puts it: "If one sees the world in atomistic terms ... the crystal is a smaller, simpler version of the organism in a nearly literal sense. If one sees the world in terms of hierarchically organized levels, (the organism becomes the primary metaphor), the crystal becomes an intermediate state of organization. There is no longer a continuum of forms all based on a corpuscular foundation, but

rather a discontinuous series of 'organisms.'"¹¹⁰ If one accepted Haeckel's Monism (and as we shall see, his Monism or versions of it were espoused by other scientist-philosophers influential on Modernists such as Wilhelm Ostwald, Ernst Mach and Raoul Francé), the orthogonal, as opposed to curvilinear forms of crystals could be seen to be "biomorphic" as well.¹¹¹ Monism called into question the curvilinear/orthogonal opposition associated with the organic/inorganic split. This must be borne in mind as one navigates the waters of biomorphic Modernism and the associated, often fluid positions of materialists and Vitalists along the Monist-Dualist continuum. A Monist Vitalist critic such as Kállai was unwilling to distinguish theoretically between curvilinear and orthogonal abstraction as Barr was, even if the examples Kállai cited when discussing *Bioromantik* were, by and large, "curvilinear." He preferred to conceive of this dichotomy as a creative dialectic. Lisa Phillips has written cogently of this problematic:

The legitimacy of the terms we use to describe this world needs to be continually reevaluated ... the term "organic" is most frequently associated with plants and animals in art, it typically denotes biotic, botanical, and biomorphic configurations as opposed to "geometric" ones. But, as we now know, living matter is composed of particles that can often be geometrically described.... There are also organic forms in the non-natural world: biological and geometric models fuse in machine forms and in organized systems such as information or electronic circuit theory, cybernetics and systems analysis. It is clear that what we now need is an expansive definition of organic, one that refutes both the notion of a stringent boundary between nature and culture and the archaic dichotomy between the organic and the geometric. Only then will we be able to follow the development of organic abstraction in America -- how each generation has responded to our changing understanding of the natural world.¹¹²

With the emergence of fractal geometry in the late 1970s and 1980s, the last nail in the coffin of the idea that the "geometric" is opposed to the "biomorphic" (organic) has been

inserted. A paradigmatic "bioromantic" artist such as Arthur Dove, consequently, produced works which incorporated an integrated understanding of the two categories, work which as Sherrye Cohn puts it, are "expressive evocations of the geometric order which lies behind organic form."¹¹³

g. MOMA: Form over Content

Barr's privileging of form over content did not go unnoticed in the Unit 1 circle, in which Read's *geistesgeschichtlich*, iconographic and "Northern" approach was supported in opposition to Fry's francocentric formalism.¹¹⁴ The review in *Axis of Cubism and Abstract Art* by J. M. Richards made it plain that -- unlike even the Marxist Schapiro -- the British Modernists were critical of a purely formal approach to understanding art-making and taxonomizing it: "Mr Barr has engaged himself in placing each artist in his right pigeon-hole but he is apt to give the impression that by doing so he has done all that is necessary to explain the artist's existence."¹¹⁵

Herbert Read was noticeably absent from this debate.¹¹⁶ We have seen that though aware of the link between biomorphic Modernism and Vitalism, Read's commitment to Worringer's problematic writings seems to have prevented him from formulating this link into a category of artistic production until 1951, and from discussing it until 1964. This effectively left Barr's formalist framing of biomorphic Modernism unchallenged within the Modernist discourse. The rise to hegemony of post-war American formalism, and within it, of Barr and his organizational schema of Modernist art, further ensured that it was Barr's formal definition of "biomorphic" and "organic" abstraction that was canonized.

Barr's conflation of "biomorphic" and "organic" was reproduced in the MOMA's publications, spawning a plethora of terms referring to biomorphic Modernist art. Thus, Barr's negative nomination "Non-Geometric Abstract Art" of 1936 was rendered positively by Eliot F. Noyes for the "Organic Design

in Home Furnishings" competition of the MOMA in 1940-41, won by Eero Saarinen and Charles Eames.¹¹⁷ This term was in turn adopted by Robert Goldwater as "organic abstraction" for the 1949 MOMA exhibition and catalogue *Modern Art in Your Life*,¹¹⁸ and switched to "biomorphism" in his 1969 *What is Modern Sculpture?*.¹¹⁹ In the early 50s, Barr's successor at the MOMA, Andrew Carnduff Ritchie, also employed the term "organic abstraction" in describing biomorphic Modernist work, but he introduced related categories, Worringerian oxymorons such as "Naturalistic Geometric" and "Expressionist Biomorph-ic," which demonstrated the multiplicity of categories and terms possible within the formalist paradigm as much as it did Ritchie's happy indifference to Worringer.¹²⁰

Barr recognized that many of the artists working in the biomorphic style in the 1920s were associated with the Surrealist movement, particularly with Surrealist production usually referred to as "automatic," and by 1945 Parker Tyler was writing of Matta as "a surrealist of the biomorphic school."¹²¹ In 1968 Barr's successor as Chief Curator of Painting and Sculpture at the MOMA, William Rubin, referred to "automatic" Surrealist art simply as "organic" or "biomorphic" Surrealism, but like Barr -- and unlike Tyler and Dorner -- he left matters at that: a vague, if accurate, comment on stylistic affinities.¹²²

However, as the writings of critics such as Kállai, Read, Grigson, Tyler and Dorner, the artists' own texts, and as the secondary literature on these painters and sculptors testifies, a biocentric intention to employ biomorphic forms as signifiers of natural forces and processes was central to many of the artists. But with few exceptions, this aspect of the work tended to be underplayed or ignored,¹²³ and until the 1980s historians have done little more than invoke "automatism" to explain the stylistic commonality of such art.

The use of a fully "automatic" method has, however, been called into question,¹²⁴ and the organic, process-based

metaphor of artistic production latent in the artists' claim to "automatism" has more often than not been downplayed. As the literary critic Renato Poggioli noted in 1968, "[c]ertainly rarest of all exceptions is the case of an avant-garde artist or critic who recognizes the avant-garde's affiliation with romanticism as a central factor."¹²⁵ Poggioli rightly cites Herbert Read and his 1936 article "Surrealism and the Romantic Principle" as such a rare exception. But, as he points out, Read proposed an essential rather than a historical connection between the two.¹²⁶ Poggioli does not discuss the German art historian transplanted to America, Alexander Dorner's writings of the 1940s, in which he denoted the "abstract" or "automatic" Surrealists simply as "Romantic Surrealists," distinguishing them from the "Retrogressive [i.e. 'verist'] Surrealists" who insisted upon retaining traditional perspectival space, which according to him denoted an outdated conception of "Being," rather than the curvilinear (read: "biomorphic") style derived from Romanticism, which functioned as a "hieroglyph" for an up-to-date world view of "Becoming."¹²⁷ Dorner's schema, despite its publication in Wittenborn-Schultz's "Problems of Contemporary Art" series, however, did not enter the critical cannon. It was not until the early 1990s that, in the work of Christa Lichtenstern and Elizabeth Legge, and in a 1994 exhibition catalogue published by the Sprengel Museum in Hanover, the close relationship between the biomorphic Surrealist art of Hans Arp, André Masson and Max Ernst, and the intellectual heritage of German Nature Romanticism -- particularly Neo-Vitalism and the organicist *topos* -- were treated rather than merely noted.¹²⁸ It should also be said that it is only by force that some artists often categorized as "Surrealist" fit into that category.¹²⁹

h. Kállai and *Bioromantik*

Grigson, Barr, and those involved with the 1935 Lucerne exhibition were not the only ones to frame this art early on. They were preceded by Walter Benjamin and Ernő Kállai, paralleled by the Swiss critic Carola Giedion-Welcker, and followed by the German transplant to America, Alexander Dorner. Following Walter Benjamin's brilliant, almost offhand observations of 1928 made in his review of Karl Blossfeldt's photographs, Kállai was the first critic to systematically theorize what was in effect biomorphic Modernist art as a category.¹³⁰ As mentioned above, Kállai's framing of biomorphic Modernism was rooted in the thinking of the biocentric philosopher Ludwig Klages, who saw the world as evincing a "struggle" between intellect and soul, i.e. *Seele* and *Geist*, an awareness of our rootedness in "nature" on the one hand, and what Kállai termed the "profane trinity of rationalism-materialism-utilitarianism," on the other.¹³¹ Kállai constructed what he saw as the valuable, Modernist art of his day as a dialectical pair; a nature-aware or nature-depicting art he termed *Bioromantik*, and a Constructivist *Technoromantik* which expressed the "technoid" and "constructive drives" in us, a pairing discernable already in his writings of the early 1920s.

Like Grigson's, Kállai's views were based in a biocentric worldview and were formulated with an awareness of the naturamorphic, particularly scientific image analogy, which, as I will show in Chapters Three and Four, was pioneered by Kandinsky, and then by Lazar El Lissitzky and Moholy-Nagy within the biocentric Constructivist discourse of the mid 1920s. Kállai's first realization of the scientific image analogy took place in 1929, within an exposition whose juxtapositions of all kinds of photographic imagery, artistic and non-artistic, were determined by Moholy-Nagy according to the precepts of his "New Vision," a pioneering effort at visual education which -- even if unconsciously -- underlies Barbara Stafford's attempts today at developing a "pictology," a visual rather than a

textual approach to understanding culture.¹³²

While the polar structure was there from the start, and he had been developing these ideas since at least 1926, Kállai published "Bioromantik," their most cogent articulation, in the trilingual Modernist Bratislava journal *Forum* in 1932.¹³³ In this article he proposed that there existed among contemporary artists a trend he termed *Bioromantik*, related to but superseding the 19th century Romantic and later Expressionist traditions. While translatable as "Bioromanticism," Kállai would have resisted a possible implication of this, the only feasible English rendering, that *Bioromantik* constituted a self-conscious "movement":

Bioromantik should not mark the christening of a new "ism" ... we are concerned here simply with the explication of the situation wherein stylistically very different phenomena of modern art are bound by a deeper unity.¹³⁴

He characterized this trend as consisting of art whose forms, where abstract, are reminiscent of or simplifications of organic nature: "die Kunst der geistigen Wesenschau braucht dem Figuralen keineswegs aus dem Weg zu gehen, um zu ihren Zeichen und Bildern zu gelangen. Und sind es keine Figuren, die auf den Bildern von Hans Arp ... geistern, so sind es doch *Figurationen*, die auf Gestaltmotive tierischer und pflanzlicher Organismen zurückgehen."¹³⁵ He also characterized this art as reflecting aspects of nature not normally visible such as the microscopic, the cosmic, and the undersea. Parallel to the Surrealists and their concern for the marvellous and the bizarre, Kállai remarked on the effect that the view to another world had on the artists: "Die Schranken unseres Bewusstseins grenzen nirgends dichter und erschreckender an das Jenseits als beim Anblick des Mikrokosmos. Es liegt ein Schock in diesem Anblick, den man mit der gleichen Unmittelbarkeit nur noch vom Rätsel des Makrokosmos, der Zeugung und des Todes empfängt."¹³⁶ Kállai noted that such art often echoed forms seen in scientific imagery. He saw such work as

picturing or unconsciously reflecting biocentric *Lebensphilosophisch*, Neo-Vitalist, Monist and neo-Pantheistic concepts such as a pervasive life force; the unity of spirit and matter; the decentering of the human species; the Goethean idea of *Urform*; what, after Hans Prinzhorn, the palaeontologist Edgar Dacqué and Carl Gustav Jung, Kállai termed the "demonic" forces of nature; and the "new," i.e. post-Darwinian, neo-Lamarckian, ecological biology. Thus, while emphasizing its visualization of the "demonic" in nature, Kállai was also eager to point out the ways in which the biocentrism underlying Bioromantic art was supported by the latest results of science, from genetics and Prinzhornian psychology to Dacquéan palaeontology.¹³⁷

In delimiting *Bioromantik*, Kállai's approach -- like Grigson's, Read's and Erni's -- was antithetical to Barr's bounding principle for biomorphic Modernism. He remarked on the "eigenartigen Formzeichen der Bioromantik," but rather than these formal affinities, Kállai focused on the thematic commonalities of the artworks, on the biocentrism of the iconography or of his readings of the abstract forms, and on their origins in Nature Romanticism and what he and others termed the "new biology."¹³⁸

As we have noted, this thematic/genetic delineation of Bioromanticism, and his own biocentrism, resisted the identification of organicism with curvilinearity, allowing in principle -- as in *these antithese synthese* -- for the inclusion of, for example, crystalline geometric abstraction within the confines of his category if he saw such work as reflecting deep natural structures and forces. "Es wäre verfehlt, wollte man den geistigen Drang der Lebensergründung in unserer Kunst nur unter bestimmten stilistischen Voraussetzungen gelten lassen."¹³⁹ Yet even though Kállai remarked on the wide stylistic range of the art, in practice all of the artists and their works which Kállai cited in "Bioromantik"¹⁴⁰ and most of these cited in other relevant texts were characterized by a

biomorphic abstract style or biomorphic imagery within a Modernist aesthetic discourse.¹⁴¹ In effect these works described the style of "non-geometric abstraction" as delineated by Barr. It was this biomorphic, *curvilinear* understanding of *Bioromantika* which came into popular usage in Kállai's Budapest circle in the late 1940s, an understanding not challenged by Kállai himself.¹⁴² In practice, Constructivism was accommodated by *Bioromantik's* dialectical Other, what he termed "*Technoromantik*."

Kállai's achievement was remarkable. Not only was he the first to systematically frame biomorphic Modernism, he was -- along with Kandinsky, El Lissitzky, Karel Teige, Benjamin and Moholy-Nagy -- an early Modernist formulator of the naturamorphic analogy, a *topos* then recapitulated by critics such as Grigson, Read, György Kepes, Leo Steinberg, Oto Bihalji-Merin, Georg Schmidt, Georg Schenk and René Huyghe.¹⁴³ Though like Read, he tended to privilege an essentialist "psychobiological" explanation for the phenomenon of biomorphic Modernism, in "*Bioromantik*" Kállai suggested that biomorphic Modernist artists were drawn to scientific imagery, suggesting its direct influence:

Das Bewusstsein um die irrationalen Verstrickungen des ichs mit dem Keimwesen und -Strukturen der Natur fühlt sich rätselhaft angezogen durch den Anblick von Mikro- und Röntgenaufnahmen. Sie sind für die Phantasie der Bioromantik so anregend, wie das Studium der Anatomie für die Aktmalerei.¹⁴⁴

This anticipates Brian O'Doherty's call for research into this subject by 40 years.¹⁴⁵ Kállai recognized the importance of biocentric ideologies in the genesis of such work; he did not make the separation between painting and sculpture in this connection; he pointed out the links with the "new biology," he took the importance of both art and scientific photography into consideration; and as early as 1932 he coined the term *Bioromantik* to refer to the tendency. In short, he recognized a complex cultural pattern while in the thick of its develop-

ment, he defined it, and he named it. His writing is the starting point for my work.

i. Giedion-Welcker's "Organic Elementarism"

Married to the Organicist Modernist historian Siegfried Giedion,¹⁴⁶ and a friend of Arp, Klee, Moholy-Nagy and other prominent Modernists, Carola Giedion-Welcker is an under-appreciated critic and historian who came from an intellectual background similar to Kállai's.¹⁴⁷ She was -- along with Kállai and Grigson -- the first to systematically discuss the concern with nature and organicism of sculptors such as Brancusi, Arp and Moore, and painters such as Ernst, Klee and Kandinsky.¹⁴⁸ In 1934 she wrote of a "return to the primal phenomena of life," of an "organic elementarism" in contemporary sculpture:¹⁴⁹

Modern plastic art wants to reconstitute the primal qualities, it wants to go back to the elementary sources in order to form generally valid symbols of time, the world and nature from out the simple viewpoint.... *The composition of volume and movement[,] the relations of mass and material within an elementary organic or stereometric world of bodies are the fundamental points of departure.*¹⁵⁰

As early as 1937, Giedion-Welcker published a monograph on Modernist sculpture, *Modern Plastic Art*, which was the first of its kind in English.¹⁵¹ The book was published in a revised edition as *Contemporary Sculpture* in 1955, the twelfth volume in Robert Motherwell's "Documents of Modern Art" series, and so entered the American discourse as an alternative to the formalist view of sculpture.¹⁵²

Giedion-Welcker saw modern art much as Kállai did, as a mirror of *geistig* developments of contemporary culture. She employed the term "Organic Elementarism" to describe, in effect, biomorphic Modernism.¹⁵³ She stressed in her writing the development of some Modernist sculpture "in the direction of man's union with all creaturely life," and as a "recollection of a mysterious participation of man with nature and the

world of creatures."¹⁵⁴ She also wrote of the "symbiosis of biological growth and technological construction" in modern art and design, an art "which encloses nature and civilization in pure forms of energy, [and which] mirrors our dynamic conception of the world, whether its shapes incorporate the basic principles of growth in nature, or express in constructions the mind of man again on the march into the future."¹⁵⁵ In Surrealism she saw "a continuously active process of metamorphosis.... All biological and psychological frontiers are blurred: men and beasts, animate and inanimate objects, converge and coalesce to proclaim the sovereign domination of transcience."¹⁵⁶

Giedion-Welcker did not synthesize these thoughts into a conceptual framing of a nature-centric trend in Modernist art as Kállai had done by 1930. Unlike her, however, Kállai -- despite Max Bill's help -- was unsuccessful in his attempt to incorporate his critical perspective into the -- by then dominant -- American discourse.¹⁵⁷ Had he done so, or had Giedion-Welcker developed a category as Kállai had done and included it in her book, the European thematic framing of biomorphic Modernism might have competed with Barr's formal one.

j. Dorner's "Expressive Curve"

Another European who published in America after the war, Alexander Dorner focused in his writings on what Giedion-Welcker referred to as the "sovereign domination of transcience" in his 1947 theoretical account of Modernist art, which he "illustrated" with a study of the biomorphic Modernist artist Herbert Bayer.¹⁵⁸

This whole Western drive toward the Absolute, toward a check on temporal change must be seen as a provisional deliverance from the anxieties of a magical universe, from a fear of an uncontrollable world rife with energetically changing objects. By realizing this we can also realize why the modern transition to a wholly energized world has been inevit-

able. Yet it would be quite wrong to speak here of a mere relapse into magical notions. The vital force of the universe consists in its complete irreversibility, and life never tolerates a relapse. The modern road leads across the rigid stretch of three-dimensional reality toward a stronger and more profound unity, toward a growth open to autonomous change.¹⁵⁹

With this Bergsonian neo-vitalistic perspective in mind,¹⁶⁰ it comes as no surprise that as director of the Landesmuseum in Hannover it was Dorner who in 1926 commissioned the biocentric Constructivist Lazar El Lisstizky to design a gallery for abstract art, and then in 1930 requested from Moholy-Nagy plans for a "Raum der Gegenwart," a permanent gallery demonstrating the "New Vision." While El Lissitzky's project was realized in 1927, Moholy's was not due to the Nazi rise to power in 1933.¹⁶¹

Unlike Kállai and Giedion-Welcker, however, for Dorner, form was crucial. Indeed he framed his discussion of modern art (particularly Biomorphic Surrealism) in terms of a tradition of the "free curve" in art extending back to the Romantic age. (Figs. 1-2 and 1-3) As we have seen, he saw the "free curve" as a "hieroglyph" for a dynamic worldview of "Becoming," as opposed to the more traditional view of a set state of "Being."¹⁶²

As 'expressive line' [the free curve] began more and more to dissolve traditional spatial form with its overlapping contours. This may be said of all stages of Romantic evolution, of Fuseli ... to Kandinsky and the Romantic Surrealists. The Romantic expressive line left behind the old spatial contour and developed into a new autonomous form, which now hovered strangely within the spatial frame. The picture began to acquire a new and disquieting mobility.... *Each Romantic picture is a movement leading from perspective reality to the new reality of an immobilized formal urge....*¹⁶³ Yet neither [the Romantic artists nor the Impressionists] were able to push that liberating advance toward a changeable world concept far enough.... They prepared the milieu out of whose tensions grew the new movements which abandoned the remnants of the absolute static cause and pushed forward into the greater depth of a

self-changing universe. The pioneers of this thrust are the *abstract artists* and their offspring, the *modern realists*.¹⁶⁴

Dorner recapitulated Kállai's arguments about a new "realism"¹⁶⁵ when he saw this development as leading towards an art which was "realistic" though it was "abstract" (i.e. non-mimetic) because it reflected reality as it was now understood. However, by affording equal weight to questions of form and meaning, Dorner demonstrated that a balance could be had between the more hermeneutical European approach (as seen in Kállai and Giedion-Welcker) and Barr's formalism.

k. Contextualism and its Limits

Kállai's, Giedion-Welcker's and Dorner's contextualism is necessary to understanding the circumstances of the production of artworks and their relations to the culture as a whole. From Burckhardt through Dvorák, Strzygowski, and Panofsky, to Gombrich and Crary, art historians have held that visual culture is not to be understood without reference to the intellectual and social contexts of its production and reception, and that it is multifarious -- none of its discourses can be satisfactorily understood in isolation from the others.¹⁶⁶

"[T]he history of ideas flows freely through the membranes that compartmentalize the various disciplines comprising a culture," as Barbara Novak put it in *Nature and Culture*.¹⁶⁷ The iconography of an artwork, the themes the artist wished to communicate, and the ideologies which informed its production continue to constitute bases for historical interpretation.

As Kubler has pointed out, however, an exclusively iconographic/contextual approach has its costs: "the price has been high, for while studies of meaning received all our attention, another definition of art, as a system of formal relations, therefore suffered neglect."¹⁶⁸ Even a critical, cross-disciplinary and contextual iconology cannot attempt a sufficient account of why artworks look as they do. Jean Molino has

written of this in his introduction to Focillon's book:

"Rather than seeing ideas as giving rise to forms, we must recognize that they only color them, that they surround them without ever creating them."¹⁶⁹

Nor can iconology offer interpretations of the visual and formal meanings and knowledge conveyed by artists, for it tends to leave out of the equation the autonomous logic of material and visual production, what Henri Focillon termed the "life of forms in art." Formalism is indispensable to understanding and codifying the "language of vision,"¹⁷⁰ formal affinities between works are to be seen as having significance, and so the development of a critical language of visibility deriving from the formalist tradition is to be valued. It is in recognition of this value that I take seriously Barr's formally-defined category, while it is formalism's neglect of this self-same category that makes space for my work.

In practice, as did Dorner, many art historians have combined formalist, thematic and contextual methodologies into their writing.¹⁷¹ "We are discovering little by little all over again that what a thing means is not more important than what it is; that expression and form are equivalent challenges to the historian; and that to neglect either meaning or being, either essence or existence, deforms our comprehension of both," writes Dorner's contemporary Kubler.¹⁷² Kubler's teacher Focillon has given poetic expression to this complexity and to its dangers:

Whenever we attempt to interpret a work of art, we are at once confronted with the problems that are as perplexing as they are contradictory. A work of art is an attempt to express something that is unique But it is likewise an integral part of a system of highly complex relationships ... flowing together within it the energies of many civilizations may be plainly discerned. And a work of art is ... both matter and mind, both form and content.... A work of art rises proudly above any interpretations we may see fit to give it; and although it serves to illustrate history, man and the world itself, it goes further than this.... From the above it is easy to

see how luxuriant is the wilderness of criticism that may spring up beside a work of art: flowers of interpretation that do not adorn, but completely conceal.¹⁷³

1. From the Dialectic to the Frame

We have seen that Barr, Goldwater and Rubin emphasized the forms but could not repress the iconography of the art they referred to as biomorphic and organic. We have also seen that though Kállai tended to approach the subject thematically, the examples he gave of *Bioromantik* -- a category for which he resisted *stylistic* definition -- in effect described Barr's, Rubin's and Goldwater's category. What is true of Kállai is true also of others such as Grigson, Giedion-Welcker and, as we shall see, Philip Ritterbush, Charlotte Douglas, Jennifer Mundy and Gladys Fabre. We will see in the literature review that -- with some oversimplification, and the notable exception of Dorner -- historians and critics have been approaching the equivalent phenomenon from these two broadly-defined methodological angles. Rather than thinking in terms of pure formalism, or of mere iconology or *Kunstgeschichte als Geistesgeschichte*, I shall, in framing this art, also employ that commonly-used synthetic methodology which combines these.

But how does one begin? How does one enter the dialectic of "form and content"? Historical "phenomena" are not simply "things in themselves" out there waiting to be named and discovered. The past is a vast, amorphous mass, our memory (or forgetting) of the "quantum soup" of material reality. It is constantly reframed and reinterpreted; it is in constant need of reframing and reinterpretation. It is, in fact, constantly being *constructed* mentally, if not actually *constituted* in an ontological sense, as some followers of "psychobiology" or "psychovitalism" discussed in Chapter Three held. In order to write history, conceptual frameworks, including taxonomical schemes, must be employed to structure the past, even though they inevitably involve reduction and distortion. Deciding on

a frame to employ in conceptualizing the phenomena one notices is a long and complicated process. It is like being near-sighted, and seeing something hazily in the distance, but not quite being able to make it out. During this work of what amounts to seeing rather than merely looking, one must constantly be willing to learn new facts and entirely new fields of study; to be, like a patient in an optometrist's chair, fitted with a succession of different lenses, in an attempt to find one, or a combination, which offers the clearest view of these initially hazy patterns. Historiographic innovation often involves the formulation of new frames and taxonomies, the determination of new optometric prescriptions so to speak, which make aspects of the past previously obscure or invisible, clear or visible. Depending on your epistemological orientation, it is either the "fit" of any new frame to the "actual" past, or its "usefulness" to the agendas, stated or hidden, of the historian and his culture, which determine judgements of the frame's success.

Implicit in the above discussion is my feeling for Nietzsche's "profound aversion to reposing once and for all in any one total view of the world," a view which would legitimize the single "correct" frame or interpretation.¹⁷⁴ As Jon Snyder writes

In the era of philosophical nihilism nothing can stand outside the realm of universal equivalence or lay claim to 'authenticity'; for every aspect of the world -- even Being itself -- is forever subject to further revaluation or, to put it another way, to the interpretive process through which the value that has previously been assigned to something is exchanged for another equivalent value ... This experience, which may be called postmodern ... may be broadly defined as the *infinite interpretability* of reality.¹⁷⁵

Applied to history writing, Mark Roskill has reformulated this insight as "there can be no avenue to truth, or ultimate key to meaning, apart from the history of successive interpretations made from particular positions."¹⁷⁶ Such positions are,

of course, a reflection of the cultural practices of a particular place and time. However, a recognition of history and interpretation as culturally contingent conceptual constructs does not preclude their ability to potentially shine more or indeed less light on the phenomena they attempt to mirror or explain. But there are other pressures besides cultural or ideological ones which come into play in the writing of history. Among these is the practical, aesthetic and pedagogical one of working the sheer volume and complexity of historical phenomena into some suitably coherent form. Simple frameworks enable ease of comprehension, while not-so-simple ones can better model the complexity of "reality." The trick is to find an optimal balance between complexity and ease of comprehension. Although history necessarily involves the construction or adoption of frames, the aptitude of a given frame to make visible the past and enrich our understanding of it remains one important measure of its success. Again, the demands of fidelity to that past are part of the equation. Finally, as with glasses, one must be able to discard a conceptual frame if our vision has altered. As Kubler writes of his "formal sequences": "In the long run, the conception of a sequence may serve as a scaffolding which it may be convenient to discard later on, after it has given access to previously invisible portions of the historical edifice."¹⁷⁷ What I am arguing for is a position which acknowledges that conceptual frameworks are culturally contingent, that they fulfil historically specific needs in ways that the historian does not always realize, that they must take into account the competing requirements of complexity and ease of comprehension, and that they are necessarily provisional. But my epistemology is founded on the (no doubt naive) Husserlian *belief* that such frameworks do help us to see what is "actually" there.¹⁷⁸

The formulation of a frame and its application to the past, are my principal assignments here: I see the construction of an art historical category encompassing both stylistic

and thematic/ historical concerns -- the marriage of biomorphic Modernism with Bioromanticism, as it were, as my goal. In other words, I see my aim as the establishment of a thematically-informed biomorphic Modernism or, conversely, a stylistically-informed Bioromanticism. Jack Burnham warns that "[b]y nature art historians are pattern-creating creatures, and patterns abound in art history; but like so many broad conceptions, they begin to show serious flaws when applied to specific cases." However, I note that Burnham himself acted as a "pattern-creating" historian,¹⁷⁹ that such activity is necessary. I am aware of the dangers involved with the establishment of art historical categories, dangers such as the obfuscation of intentions¹⁸⁰ and effects and -- to paraphrase Kállai -- the addition of yet another label to the available catalogue. Nevertheless, I feel that the lack of such a category has hindered our understanding of Modernist art -- that, in Hauser's terms, it is possible to define a nature-centric biomorphic style of interwar art within which "the artistic coherence of the works concerned is greater than their divergence from each other." ¹⁸¹ This lacuna in the canonical taxonomy of trends has in effect "orphaned" major figures such as Brancusi, Klee, Moore, Hepworth, Arp and the late Kandinsky, and has led to the neglect or denial of the expression of nature-centric ideas in 20th-century Modernist art. Accurate art historical labels are crucial not only to incorporating art objects into the mainstream of art historical discourse, to making them visible, but also to fully understanding them. I would maintain that the "canonization" of such a category would result in net gains to the discipline.

m. Movement, Trend or Style?

As we have seen, Kállai avoided the implication that *Bioromantik* was an art *movement*. Renato Poggioli has pointed out that "all artistic and cultural manifestations, from romanticism on, regularly tend to define and designate them-

selves as movements."¹⁸² Why then this resistance to conceiving of *Bioromantik* as an "ism," i.e. as a "movement" in art? The reason is plain: Poggioli refers to *self-designation*, that is *self-awareness*, an element -- as Kállai would have known best -- clearly lacking here. "Movement" implies a *self-aware* group of artists who shared personal or professional associations and friendships, a "style" of art, a set of aesthetic, political, or other agendas or goals, and some kind of contemporary designation, which was either self-chosen or appended, but eventually accepted -- even if only implicitly. By this definition, the category "movement" does include, as Poggioli asserts, most of the canonical Modernist artistic groups from the Romantics onwards such as the Realists, Impressionists, the Nabis, the Symbolists, Fauves, Cubists, Futurists, Dadaists, Expressionists, etc. *Bioromantik* does not belong on this list because it constituted neither a single coherent group bound by personal or professional affiliations (though of course there were bonds of friendship between many of them, and there were groupings such as the Unit 1 circle), nor did it have a commonly accepted epithet at the time. Others who have addressed this question agree. Goldwater, as we have seen, referred to it as a tendency, while Burnham writes:

All these ... sculptors have made strongly vitalistic statements concerning their methods and intentions. However vitalism as an [artistic] movement or a cohesive expression of belief never crystallized.... As a concrete expression of the natural environment, vitalistic sculpture contains certain common features. It copies nature through example and metaphor, not primarily through mimeticism. Whatever symbolism vitalism employs is related to the growth properties of materials, those at least which can be made visible. Vitalism generates an *intuition* that life is not literally, but plastically, present in a sculpted object.... As an idea, vitalism had no boundaries; it remained a personal declaration rather than a formal aesthetic.... As a contagious influence [beginning with Rodin] the vitalistic mystique spread among sculptors almost religiously. As with all dogmas, its propagation depended upon the fact that it went unanalyzed, and

to a great extent, undetected.¹⁸³
 Bioromanticism resembles more what Poggioli refers to as a "current" or "tendency," or what we have designated as a "trend," all of these fluvial and vectorial metaphors:

["Current"] seems especially to allude to vital forces, intuitive and unconscious elements, tendencies rather than groups. As a historical term used, so to speak, *a posteriori*, it underlines phenomena of cultural history which seem to share characteristics of natural history. Thus its validity is limited to generalized and unstable orientations, cultural situations more in potential than in execution, to tendencies in a fluid or raw state ... it indicates environmental factors only translatable with difficulty into terms of historical consciousness and theoretical awareness.¹⁸⁴

Such a time-based view of history naturally lends itself to the construction of narrative structures. As argued by Hayden White, Ricoeur and others,¹⁸⁵ narrative historical writing is both valuable and appropriate as a means of communication:

It is the success of narrative in revealing the meaning, coherence, or significance of events that attests to the legitimacy of its practice in historiography. And it is the success of historiography in narrativizing sets of historical events that attests to the "realism" of narrative itself.¹⁸⁶

While the material of Bioromanticism is too complex to fit into a single narrative structure, I have written some of the chapters in a narrativized mode. Where there are divergences in the narrative important enough to warrant inclusion, I employ the tried-and-true device of extended endnotes as suggestions of alternative courses the narrative might have taken, or as synchronic extensions of the text. In reverting to this way of structuring the text -- for the bloody purging of discursive foot and endnotes has been the editorial fashion in recent years -- I acknowledge and anticipate with pleasure the advent of hypertext as a dominant textual form.¹⁸⁷

As a term used by me *a posteriori*, Bioromanticism resembles, furthermore, Walter Friedländer's, Max Dvorák's and Arnold Hauser's designation of Renaissance art of the 16th

century after about 1520 as "Mannerism."¹⁸⁸ In other words, it is a historiographic construct, though in this case it is a construct adapted from one first proposed by a contemporary critic, and this lends it a higher degree of legitimacy.

Kubler has written of the difficulty of discerning trends in the art of an age of which we ourselves are a part: "Unless he is an annalist or a chronicler, the historian communicates a pattern which was invisible to his subjects when they lived it, and unknown to his contemporaries before he detected it."¹⁸⁹ While Kállai was among the rare critics to be able to discern a contemporary trend which was not a self-aware movement, my own position is privileged. Hindsight allows me a more complete application of the frame to individual cases. Also, the time that has passed allows for greater clarity:

The wide range of systematic ages among different classes at the same moment always makes our own present seem like a complicated and confusing mosaic, which resolves into clear, simple shapes only long after it has receded into the historical past. Our ideas about Middle Minoan time are clearer than our ideas about Europe between the World Wars....¹⁹⁰

The hindsight our present-day perspective allows us tends to fuse the examples of art Kállai cites into a greater stylistic unity than he would have allowed. The correction of Kállai's view that *Bioromantik* did not describe a stylistic unity allows us to reduce our goal to the mapping out of a pattern of association between biocentrism (including psychobiological views), biomorphic Modernism, and the naturamorphic analogy. In doing this, like Hauser, we emphasize the common characteristics of a static structure of *Bioromantik*, of *Bioromantik* as a language, or a system, rather than its evolutionary development. Bioromanticism becomes, in the complex sense Schapiro defines it, a style.

n. Diachronic and Synchronic

This suggests that it is not sufficient to apply fluvial metaphors alone to this historiographic construct. The writing of a narrative is not enough. It becomes useful to introduce Ferdinand de Saussure's distinction between discussing historical phenomena diachronically (chronologically, sequentially) and synchronically (thematically, simultaneously).¹⁹¹ A synchronic analysis conceives of Bioromanticism not as a river, but as a system, or a complex pattern; a static or dynamic structure; an oceanic ecosystem, if you will. Both modes of analysis are necessary to the writing of well-rounded history. Evoking Kubler's oceanic metaphor of the Introduction, I hope to engage in both vertical synchronic studies of oceanic sectors and the ecosystems within them and horizontal diachronic investigations of oceanic currents which can best be related through the narrative form.

3. Literature Review

a. "The repression of Neo-Romance has a history"¹⁹²

Given that it was the formalist American line of art history which constituted biomorphic Modernism as a category, it is curious that -- as far as I am able to ascertain -- only one critical study has ever been written on the subject by an art historian operating within that tradition, a 1973 dissertation by Robert Metzger which focused on American art.¹⁹³ While it was this line which constituted the category, it was also American formalism which effectively limited critical inquiry into it. Though, as trained historians, Barr, Goldwater and Rubin were not as totalizing in their formalism as the critic Clement Greenberg was,¹⁹⁴ formalism naturally privileged the surface of the art object, marginalizing and even ignoring iconography. This led to partial, indeed misrepresentations of the production of artists interested in more than form and facture in their work, or in the aspects of

artistic intent beyond the stylistic.¹⁹⁵ After conducting a survey of contemporary American abstract artists in 1958, Whitney Museum of American Art director John Baur found that "most of our abstract painting and sculpture pays small fealty to the concepts of those pure abstractionists, who hold that the work of art should be a completely meaningful object in itself, of solely esthetic significance, hermetically sealed against all other associations."¹⁹⁶ Mark C. Taylor agrees:

Painting that is essentially about painting seems to leave little room for religious and spiritual concerns. Having defined the terms of debate for many critics, Greenberg effectively obscures the self-confessed spiritual preoccupations of the very artists whose work he analyzes.¹⁹⁷

One might think that instead of studies of meaning, formal analyses of biomorphic Modernism would have been conducted by art historians, but this was not the case. I have come across no in-depth formalist historical studies of the category of biomorphic Modernism, nor even of its related "movements" or groupings such as Surrealism and *Abstraction-Création*, neither synchronic ones analyzing the system of biomorphic form, nor diachronic Kublerian studies of its "formal sequence." Even formalist criticism, which might have verbally amplified the sensuous curvaciousness of the style is sparse; too often it is mere description.¹⁹⁸ While Barr's category of "Geometric Abstraction" was unhistorically conflated with "Constructivism" in much of the literature, and hence was -- misleadingly -- treated as a "movement," no such geography-defying conflation was possible in the case of biomorphic or organic Modernism with Surrealism, *Abstraction-Création* or Unit 1. The fact that it was not a "historic" phenomenon in the sense that other organized movements were, precluded its treatment by empirical historians. Meanwhile formalism's impoverished representation of its non-formal meanings rendered it either banal or incomprehensible, further discouraging historical investigation of it. Thus, while Metzger did

undertake a systematic study in his thesis of biomorphic Modernism as defined by Barr, he avoided a thorough study of either content or context.

One might add to the list of causes for this neglect an antipathy on the part of historians towards the style itself, one which has only been reversed with the advent of neo-Modernist design fashion in the 1990s. Christof Vitali noted the decline in power of these forms: "Den biomorphen Gestalten aus den zwanziger und dreissiger Jahren eignet noch die Kraft der Symbolisierung. Erst in den fünfziger Jahren werden diese weich fliessenden Organformen zur Schablone kleinbürgerlicher Dekorationswünsche entleert."¹⁹⁹ Design historian Lesley Jackson accounted for this by writing that "The New Look [i.e. biomorphic Modernist design] became a victim of its own success [by the second quarter of the 1950s]. Because it was so visually distinctive, it rapidly became the target for unscrupulous plagiarists who re-worked the superficial characteristics of its style, and regurgitated them in a bastardized form."²⁰⁰ By 1964 Max Kozloff wrote of the stylistic shift then underway: "the once pervasive and boring totemistic or insectile clichés are waning in favor of a muscular and physically or chromatically adventurous kind of statement."²⁰¹ Moore, Arp, Hepworth, Miró and others were so successful by the 50s, their work was so pervasive, that theirs became one of the "official" styles of Modernism. Younger critics and historians wished to avoid dealing with their work and its origins. Jack Burnham pointed out in his 1968 book *Beyond Modern Sculpture* that:

there was something absurd about walking into a group show and being confronted with whole nests of giant bronze and welded steel bugs, a fusion of Walt Disney and Kafka via some apprenticeship course in welding. The biomorphic-mineral influence reached a peak during the early 1960s, and with this plethora came the *reductio ad absurdum* of the vitalistic idiom ... the biomorphic mannerist tendency.... The result of this proliferation of vitalism is a semi-official academicism as deeply entrenched as that of

Gérôme or Falguière.²⁰²

Just as art historians were still avoiding 19th-century academicism in the sixties, they by and large avoided the "bug and blob" academicism of the recent past. But this biomorphism-fatigue does not account for the specific failure of art historians to link biocentrism with biomorphic Modernism in their historical writing. We shall see that it took a historian of science, Philip Ritterbush, and a Structuralist artist and art critic, Jack Burnham, to make the connection.

It has been suggested that it was the private nature of artists' Vitalist beliefs which prevented them from being discussed. We have seen in the case of Herbert Read that it was not until the end of his career, in the 1964 *A Concise History of Modern Sculpture*, that he discussed Vitalism as a trend in art. It is Burnham who first queried this:

If Bergson proposed neo-vitalism as a philosophical doctrine at the beginning of this century, then why did it take nearly half a century for a major critic to identify vitalism as a central doctrine of modern sculpture? Actually the reason is fairly apparent. The vitalist sculptor thought of his vitalistic beliefs as a personal stimulus ... rather than a public philosophy that could be formulated into doctrine for a manifesto. There were literally scores of *isms* in vogue during the period from 1910 to 1940, and nearly every vitalistic sculptor was connected to a different set of them.... It took some time for the public and critics alike to realize that not human or natural beauty in the old sense, but the raw ... motive force of nature lay behind a vitalist sculptor's creative desires.²⁰³

While Burnham's reasoning reveals in part why artists did not organize themselves into a biomorphic Modernist movement, his account does not explain the critical/historical near-vacuum.

In addition to causes already suggested, one must invoke the post-war hostility or indifference -- including Burnham's own mechanistic hostility -- towards biocentric thought.²⁰⁴ Part of a little-studied current of 20th-century neo-Romanticism, biocentrism (treated in Chapter Two) was in fact a powerful intellectual element within Modernism, and has had a

profound effect on that culture, from Expressionism, through Surrealism and British "Neo-Romantic" art, to Abstract Expressionism, Neo-Expressionism and Eco-Art. Goldwater and Rosenblum recognize the connection of this neo-Romanticism to biomorphic Modernism, but they do not treat it. The only art writer who does, Jack Burnham, does so in the context of what is in effect a mechanistic/Structuralist anti-Vitalist polemic and an obituary of the style. This underlines the fact that the biocentric currents which informed biomorphic Modernist art were -- after the rise of molecular biology in the 1940s and of genetics in the early 1950s, but before their revival within the context of the environmental and "New Paradigm" movements in the 1970s -- seen as being outmoded at best.²⁰⁵ As early as 1951 Ernest Nagel wrote "vitalism ... is now a dead issue in the philosophy of biology."²⁰⁶ By 1967, when Burnham noted that "[f]or the present, the forces of vitalism in science have been slowed down considerably, if not entirely abated,"²⁰⁷ he was stating a view which had been popular wisdom for two decades, and still is among the majority of scientists.²⁰⁸ Neo-Romanticism, and biocentrism in particular (as well as its environmentalist equivalent, Anna Bramwell's "Ecologism"), was tainted by its espousal by elements within the National Socialist and British Fascist movements.²⁰⁹ In either case they were to be denied, ignored, deemphasized, repressed, much as the occult or "spiritual" interests of the Symbolists and early abstractionists Kandinsky, Mondrian, Malevich and Kupka were and to some extent still are.²¹⁰

Characteristic is Mark Roskill's erudite intellectual history of Weimar Germany, which, though it focuses on Klee and Kandinsky, almost completely omits discussion of Vitalism or Monism despite the pervasive influence of Haeckelian Monism and Neo-Vitalism in that society and on them.²¹¹ In fact, Modernism has typically been seen to have been divorced from concerns with nature.²¹² Stephen Mansbach represents this view, denying any connection between a concern with nature and

utopian Modernism:

For utopian artists of the early decades of this century, abstract art was perceived as the most effective means to "breed to a new world" free from the accretions of the past.... it was believed necessary to abjure nature, for nature was perceived by all as the bane of creative existence.²¹³

In her catalogue essay on Environmental Art since the 1960s Barbara Matilsky does the same by implication, denying that there was an element of nature-centrism in Modernism:

Environmental art [is] important not only because it offer[s] a new way of creating art and thinking about it, but also because it cal[s] attention to nature. Not since the nineteenth century have so many artists interpreted the natural world with such intensity. Unlike earlier painters who depicted specific landscape features, environmental artists visualize the forces, processes, and phenomena of nature: organic growth, light, water, crystals and other elements.²¹⁴

In fact, the third sentence I have quoted could serve as a stylistic encapsulation of precisely that biomorphic Modernism whose existence she ignores.

Even today, in the late 1990s, few surveys of art mention the biomorphic style as being the attribute of a group of artists rather than of individuals such as Miró, Arp, Brancusi, Dove, or other artists labelled "Neo-Romantic" during the interwar period.²¹⁵ If they do, they make little attempt to explain, to interpret, or to link these phenomena. Like Barr, they at best remark upon these connections, perhaps suggest concerns with nature, and leave the matter at that.²¹⁶ It is not so surprising, then, that the very presence of a supposedly accepted term such as "biomorphic abstraction" within the artistic discourse is far more tenuous than that of "geometric abstraction."²¹⁷ And this tenuousness is the case despite the category's deliniation by Barr and his followers.

As is well known, though Panofskian iconology was the dominant mode of pre-19th-century art historical studies after

the Second World War, this methodology was not being applied to Modernist art in the 1950s. Indeed, there was very little art historical scholarship being done in the Modern field; Roskill cites Barr's 1951 book on Matisse as "the first really substantial monograph devoted to a 20th-century artist."²¹³ Art criticism, meanwhile, was dominated by formalism.

b. Antiformalism

There were, however, a few critics and curators such as Sheldon Cheney, Meyer Schapiro, Leo Steinberg, and John Baur who were arguing with the formalist orthodoxy in New York before the 60s.²¹⁹ In his 1934 book *Expressionism in Art*, Cheney included a whole chapter entitled "Abstraction and Mysticism," in which he described a Vitalist/organicist/"spiritual" view of art as prevalent among many Modernists. "There is a unity of all that is, life undivided flowing from a single principle or source, of which man can feel but not explain the nature."²²⁰

We have seen that in "Nature of Abstract Art" Schapiro was the first in America to criticize Barr, his championing of abstract art, and abstract art itself, for a lack of awareness of its social rootedness, even if by taking Barr's version of abstraction for criticism, and by focusing on the political dimension of the work, Schapiro helped establish a discourse which ignored the intended content of abstraction.²²¹ In "Style," Schapiro argued for the heterogeneity of meanings possible within a single style and the inability of a single style to account for all the production of a given era.²²²

Steinberg, in "The Eye is a Part of the Mind," not only discussed the analogy between Modernism and scientific imagery, he also attempted to deal with Schapiro's omission in 'Nature of Abstract Art.' He did this by arguing that "the formalist aesthetic, designed to champion the new abstract trend, was largely based on a misunderstanding and an underestimation of the art it was made to defend," that is,

that "modern art has not ... abandoned the imitation of nature ...; in its most powerful expressions, representation is still an essential condition."²²³

Drawing on Steinberg's line of reasoning and referring directly to Schapiro, John Baur argued for a similar view in his exhibition "Nature in Abstraction," which he organized at the Whitney Museum in 1958. As we have seen, Baur conducted a survey of contemporary American abstract artists and found that most were not formalists. He concluded, rather, that "our tendency, more marked than ever today, has been towards kinds of abstraction which draw on observed reality to create, variously, a conscious imagery, an unconscious imagery, or, at least, a kind of organic and "natural" teleology of form."²²⁴ In his selection of works for the exhibition, Baur emphasized nature as the theme, content and metaphor in American abstract art of the time, without pegging these concerns to a single style or indeed even once invoking the terms "biomorphic" or "organic."

i. Europe

Not surprisingly, after the war it was in German-speaking Europe that an awareness of *Naturromantik* in Modern art was maintained most strongly, and that it was reflected in art historical research to the greatest extent. This was the case in -- among others -- the work of Giedion-Welcker, the German art historians Werner Haftmann and Alexander Dorner (by then in the United States), the Serb artist and aesthete active in Germany Oto Bihalji-Merin and the Austrian art historian Werner Hofmann, who became particularly well-known for his application of *geistesgeschichtlich* approaches to the study of 20th century art.

As we have seen, as early as 1947 Dorner published his Bergsonian Vitalist volume *The Way Beyond Art*. In it he provided a brief overview of art history in which he discussed Klee, Kandinsky and the "biomorphic" or as he terms them

"Romantic" Surrealists such as Stanley Hayter and Masson as emphasizing Becoming over Being in their work. (He opposes the Romantic Surrealists to the Freudian "Retrogressive Surrealists,"²²⁵ Dali in particular.) He also interpreted Bayer's art of the 1940s as a Vitalist art representing the dynamism of nature.²²⁶ Published as the third volume in the "Problems of Contemporary Art" series and dedicated to John Dewey, the book was far better distributed in North America than it would have been had it been published in Germany.

In an article published in 1953 -- exactly the same year that M. H. Abrams published his history of Organicism in literature -- and in a book published four years later, Hofmann wrote of the organic metaphor in Modernist painting and sculpture, about those artists who saw their works as being creations analogous to those in nature.²²⁷ In his 1954 monograph on Klee, Haftmann devoted a chapter to Klee's conception of nature and the relationship of this conception to his art, as had Giedion-Welcker in her monograph on the artist published two years previous.²²⁸ Giedion-Welcker had also emphasized the relationship to Neo-Vitalist ideologies as well as occultism of Kandinsky's aesthetics as early as 1951.²²⁹ In 1958, to celebrate the bicentenary of the Swiss chemical firm J.R.Geigy, Geigy employee Gottfried Honegger, Basle Kunsthalle curator Arnold Rüdlinger, and art historian Robert Schenk organized an exhibition on the scientific image analogy at the Basle Kunsthalle. Two years later, Schenk and Georg Schmidt published a book on the subject, *Kunst und Naturform*. As mentioned already, they noted that geometric abstract works tended to have formal similarities with microscopic inorganic (or inanimate) nature, and biomorphic abstract works with organic (i.e. animate) nature. Rather than looking for historical reasons for the formal parallels between Modernist art and scientific photography, these authors proposed the psychobiological or Jungian explanation of a common deep structure shared by nature and artists working its way into

the *Zeitgeist*.

The remarkable Oto Bihalji-Merin, a participant in the Berlin avant-garde scene of the 1920s and a one-time Communist, discussed all of Modernism in Jungian terms as the expression of deeply-intuited forces of nature, and along with Huyghe, Schenk and Schmidt, he is one of the few art historians to discuss the naturamorphic analogy.²³⁰

Unfamiliar with or resistant to Barr's formal framing of Modernist art, these Europeans, though sensitive to the Neo-Romantic concern with nature of Modernist biomorphic art, did not conceptualize the phenomenon as a trend.²³¹

ii. A Pregnant Historical Moment

The revival of interest in a *geistesgeschichtlich* approach to the study of Modernist art in North America during the 60s was partly attributable to two German art historians. Otto Stelzer of Hamburg University published his remarkable book *Die Vorgeschichte der abstrakten Kunst* in 1964, in which he sketched out a plan for research into the intellectual origins of abstraction that included everyone from Goethe to Bergson.²³² Werner Hofmann, founding director of the Museum des 20. Jahrhunderts in Vienna, taught at Berkeley in 1964 and published *Turning Points in Twentieth Century Art* in America in 1969, the year he became director of the Hamburg Kunsthal-
le. This book, written as a critique of Greenberg's article "The Crisis of the Easel Picture," employed his anti-totalizing historiographical technique of identifying and working with "productive contradictions."²³³ Hofmann was, along with Stelzer, one of the first to emphasize and discuss the links between Bergson's Neo-Vitalist conception of creative evolution and biomorphic forms in Art Nouveau, for example in the work of Van de Velde:²³⁴ "Bergson seems not merely to justify the biomorphic ideals of Art Nouveau, but to throw light on its material stratifications."²³⁵ In a Jungian mode, Hofmann discusses the impulse of some Modernist sculp-

tors as a mythic one concerned with the creative and destructive aspects of nature:

Damit tritt sein Schaffen in die mythische Sphäre ein, neue Inhalte bedrängen ihn: die grossen, einfachen Schöpfungsstatsachen der Welt, Fruchtbarkeit, Bedrohung, Lebensgier, Zerfall und Wiedergeburt. Durch hundert Ahnungen geht er hindurch, gelenkt von dem Entschluss, an der Genesis der Gestalt das Ereignis der Weltsetzung noch einmal zu versuchen.²³⁶

As in the case of his fellow Europeans, he sees such impulses as so pervasive among Modernists that, though this question arises most concretely in his discussions of Brancusi, Arp and Moore, he does not discuss biomorphic Modernism as a stylistic group. His use of Focillon's conception of formal morphology acting across media, meanwhile, is a rare application of the Frenchman's formalist theory to Modernist art historical practice.²³⁷

In 1965, the first article devoted to Biomorphism in Modernist art appeared in a special issue of *Artforum* devoted to the "New York School." Developing Barr's taxonomical idea, Lawrence Alloway's prescient "Biomorphism in the Forties" raised several crucial themes including the inability of the dominant artistic taxonomy to account for biomorphic Modernists; the heritage of the Art Nouveau; the attempt to "Shanghai" biomorphic Modernists into the Surrealist movement; and the importance, historical and conceptual, of microscopy and organic themes and motifs.²³⁸ While Alloway's work treated the New York School and so focused on the Jungian intellectual background of that art rather than the biocentrism which lies behind Jung himself, it was important in suggesting a wider historical context and a functional, multivalent category independent of the conventional taxonomy.

By 1967 Goldwater gave expression to his evident impatience with the reduction inherent in the teleological formalist "master narrative." Building on his early work on "Primitivism," and in effect recapitulating Herbert Read's struggles with this problematic during the 30s,²³⁹ he offered

a critique of this narrative in his often-overlooked essay *Space and Dream*. In this text -- parallel with Leopold Ettlinger at the Courtauld Institute, the Swedish-Finnish art historian Sixten Ringbom, Robert Herbert, Robert Rosenblum and his student Robert Welsh²⁴⁰ -- Goldwater opposed the Greenbergian version of 20th-century art history, that non-Surrealist Modernist art is to be read in exclusively formal/material terms. He suggested instead that a thematic approach to understanding Modernism based on what artists said or wrote was also useful.²⁴¹ He concluded that a kind of neo-Romanticism was the impulse behind a significant proportion of Modernist art production. It is worth quoting Goldwater at length to get a sense of the construction of his argument in opposition to reductive, teleological formalism:

A number of fundamental concerns appear with surprising frequency in the writings of artists during the years from 1920 to 1940.... Space, movement, dream, constellation, and the cosmic.... Such references seem at first glance to have little to do with the visually self-reliant syntax of modern art ... they are more appropriate to the romantic painting of an earlier century.... They suggest landscape and sky, lonely coasts and clouds, the smallness of man and the infinity of nature.... Surrealism, as a school, intervened and interrupted the analytic development from Cubism to geometrical abstraction, and played a role in calling upon other than conscious sources in the creation of art, and in reintroducing ambiguous and "literary" meanings. But Surrealism was not alone in this.... Such impulses were much more widely spread, more general, and largely independent of Surrealism. They are to be found not only in representational art, but in various kinds of abstraction too, and in Germany, Switzerland and Russia as well as in France. Less analyzed, therefore perhaps less laboured and so also perhaps less obvious, they are nevertheless fundamental to a wide variety of painting and sculpture in this period.²⁴²

After having prepared the reader for a treatment of neo-Romanticism in Modernist art, however, Goldwater sets up yet another binary structure to classify these impulses -- an interest in space as a metaphysical reality, and a concern

with dreams -- a structure which like Worringer's and Barr's, falls short of a satisfactory account of the nature-focus he himself identifies. Furthermore, though he elsewhere discusses biomorphism or "organic" abstraction as a stylistic tendency within Modernism, and though many of his examples are biomorphic, he avoids the treatment of biomorphism as style.

Working parallel to Goldwater was Robert Rosenblum. Based on the seminal article by Klaus Lankheit of 1951, Rosenblum's 1961 article "The Abstract Sublime" began developing the thesis that

there is an important, alternate reading of the history of modern art which might well supplement the orthodox one that has as its almost exclusive locus Paris.... My own reading is based not on formal values alone -- if such things can really exist in a vacuum -- but rather on the impact of certain problems of modern cultural history, and most particularly the religious dilemmas posed in the Romantic movement, upon the combination of subject, feeling, and structure shared by a long tradition of artists working mainly in Northern Europe and the united States.²⁴³

Rosenblum presented his thesis in coherent form for the first time in a series of lectures at Oxford and at New York University in 1972, publishing the talks in 1975 as *Modern Painting and the Northern Romantic Tradition*. When treating interwar Modernism Rosenblum repeatedly remarks on the prevalence of "organic" style in association with neo-Romantic iconography.²⁴⁴ But he does not develop this line of thinking, and because by virtue of his thesis he is committed to excluding artists working in France, he would in any case have been compelled to omit the work of figures such as Miró from the equation.

The German-Canadian art historian August Wiedmann explored the "Romantic roots in modern art" in a book written before Rosenblum's appeared, but published after it.²⁴⁵ Though he does not cite Hofmann, Wiedmann followed in the Austrian's footsteps by characterizing much Modernist art

production as organicist.²⁴⁶ His book, admirable for its clarity and simplicity of argument, is as important as Rosenblum's in establishing the continuity between Romanticism and early-20th-century Modernism. Greatly refining the conceptual bases of Rosenblum's thesis, the American theologian and deconstructionist cultural historian Mark C. Taylor accords a central position to Romantic theology, what he calls "theoesthetics," in the genetic line of Modernist art:

The theoesthetic formulated in post-Kantian theology and philosophy implicitly informs seemingly diverse artistic practices developed throughout this century ...the goal of theoesthetics is union with the Absolute or the Real, which underlies or dwells within every person and all phenomena. Since this Absolute is universal, many artists insist that it can be reached only through the activity of abstraction in which particularity and individuality are either negated or suppressed.²⁴⁷ ... [T]he theoesthetic developed in Jena during the last decade of the eighteenth century forms the very foundation of modern and modernist postmodern artistic and architectural practices that extend far beyond the borders of Germany.²⁴⁸

iii. Outsiders

Often it is those positioned outside the mainstream of a discipline who are able to break established patterns of thought. The only comprehensive, thematically-informed historical treatments of biomorphic Modernism I am aware of before the early 80s are two remarkable works by non-art historians, both of which appeared in 1968: science historian Philip Ritterbush's exhibition and monograph *The Art of Organic Forms*, and sculptor Jack Burnham's polemical and historical book *Beyond Modern Sculpture*. Burnham is himself aware of the advantages of being an outsider: "I am sure that my lack of success with the tools of art scholarship is in part responsible for the present book."²⁴⁹

Chapter Five of Ritterbush's book is concerned with biomorphic Modernism and the organic metaphor. Building on his

own research and on the art literature of the 1950s, Ritterbush makes an important contribution to art history as well as to the history of biology. Drily noting the paucity of art historical literature on this subject,²⁵⁰ he bases his usage of the term "biomorphism" on Barr and Rubin, and his work on publications such as the organicist interdisciplinary anthologies edited by György Kepes and Lancelot Law Whyte,²⁵¹ Leo Steinberg's "The Eye is a Part of the Mind," Schmidt and Schenk's *Kunst und Naturform*. and John Baur's *Nature in Abstraction*. Ritterbush addresses the problematic of the natural-morphic analogy within the context of the history of the idea of "organic form," that is,

the system of beliefs originating with F. Schlegel, Schelling, and Coleridge, that form in living beings is more complex than form in nonliving nature and that the form of living organisms or their remains is a property of the whole, while in nonliving entities form results from the disposition of the parts of which they are composed.²⁵²

Ritterbush employs an interdisciplinary approach based in the history of ideas often lacking in art historical studies up to that time despite Strzygowski's and other's efforts. Thus, he embeds a discussion of the work of artists such as Redon, Klee, Ernst, Miró, Kandinsky, Masson, Tanguy and Arp, into a general discussion of organic form, including treatments of scientific illustrators such as Ernst Haeckel and Stéphane Leduc, and the morphologist D'Arcy Wentworth Thompson. Writing with the authority of an historian of science, Ritterbush proposes the theory that it was from the realm of aesthetics - as defined by Goethe and other Romantics - that the new science of biology assumed the idea of organic form in the early 19th century, an idea which was crucial to the development of that discipline. "The progress of biology in the 19th century resulted largely from the pursuit of a program of investigation whereby the esthetic presuppositions of the idea of organic form were shown to be applicable to the scientific study of organisms."²⁵³ Thus, when organic forms were adopted

by Art Nouveau designers and biomorphic abstract artists from biological illustrations, it was a *restoration*, a return of the idea of organic form rather than a simple *borrowing* of it. As Donna Haraway notes, "the essential relationship between biology and art [demonstrated by Ritterbush] should not surprise anyone.... [It is] rooted in the problem of form and the primacy of vision."²⁵⁴ As we shall see, the relationship between the formal and ideological expressions of these disciplines underly my work in profound ways.

Though he does not cite much direct evidence for the appropriation of scientific images by Modernist artists, Ritterbush asks important questions, and begins a systematic treatment of the questions raised by the naturamorphic analogy. Some years later art historian Vivian Endicott Barnett demonstrated this process in the case of Kandinsky's Parisian works, which Ritterbush was among the first to cite in this connection.²⁵⁵

René Huyghe's 1971 book *Formes et Forces* was written while Huyghe was a visiting Kress Foundation fellow at the National Gallery in Washington in 1967. Aware of the Basle exhibition "Kunst und Naturform," and in contact with Philip Ritterbush at the time Ritterbush was organizing his exhibition,²⁵⁶ Huyghe treated all forms, natural and cultural, as expressions of the same forces which animate the universe. Invoking Jung, Huyghe wrote that "La forme est un vaste univers clos qui englobe tout ce que nous pouvons percevoir hors de nous et rêver en nous, et au-delà duquel nous ne pouvons aller."²⁵⁷ With the exception of Huyghe, Ritterbush's work has been largely ignored by mainstream art historians.

In *Beyond Modern Sculpture* Burnham identified biomorphic Modernism in sculpture and pinpointed Neo-Vitalist philosophy and Organicism as its animating ideologies:

Early in the present century the process of reification began to draw the sculptor away from an exhausted naturalism and toward an analytical awareness of biological life supported by vitalism. Thus, in a chapter entitled

"The Biotic Sources of Modern Sculpture," vitalism is introduced both as a scientific doctrine and a sculpture aesthetic. It is shown that vitalism, as a source of artistic reification, lasted as long as it remained tenable as a scientific philosophy.²⁵⁸

Coming across this chapter two years after I began work on this dissertation -- after having struggled with what I assumed to be an eccentric interest in the relationship between Vitalism and biomorphic Modernism -- was an important milestone in the development of a conceptual frame for my work. To refer to biomorphic Modernist sculpture, Burnham employed Herbert Read's term "vitalist sculpture," which, as we have seen, Read finally adapted from Henry Moore in the early 50s. Though he disagrees with their aesthetics, Burnham based this chapter on Read and Giedion-Welcker's Vitalist-inspired outlines of Modernist sculpture:

Vitalism, based as it is on nonphysical substances and states of life, is a metaphysical doctrine concerned with the irreducible effects and manifestations of living things. It was the great discovery of twentieth-century sculpture that these did not have to be appreciated through strict representationalism. Visual biological metaphors exist on many levels besides the obvious total configuration of an animal or human.²⁵⁹

As we have seen, Burnham commented on the failure of biomorphic Modernism to coalesce into a coherent, self-conscious movement.²⁶⁰

Burnham's interest in the Vitalist impetus behind some Modernist sculpture was motivated by his own mechanist/Structuralist aesthetic program, what he referred to as "Cyborg Art": "Nearing the end of an age which sought vitality in latent visual metaphor, the *élan vital* will be looked upon as the old prime mover, while the Greek *kybernetes* ... becomes the expression of a new and even more effective prime mover."²⁶¹ He saw "vitalist sculpture" and its program of incorporating "vital energies" into inert matter as the static, conceptual precursor, of a kinetic, Cybernetic Art of the future. Clearly, Vitalist Sculpture fit neatly into his

own program. Burnham attempted nevertheless to account for the failure of art historians to recognize the Vitalist content in Modernism:

Following Rodin, other sculptors, both representational and abstract in their work, adopted the vitalistic attitude. Curiously, it was one of the few ideas in modern sculpture that sculptors often mentioned when explaining their work process and attitudes toward materials. Yet the idea took a long time to penetrate the minds of critics who had to write about modern sculpture. Perhaps the personal, almost religious, fervor of the *vital impetus* made it incomprehensible to the non-artist. In this instance the critic had to confront both a literary or overtly stylistic influence, and a *biological* relationship between the artist and his materials. Not until the 1950s did any critic [i.e. Herbert Read] really begin to look at vitalism as a separate and specific philosophy for the creation of sculpture.²⁶²

Burnham's critique of contemporary art history goes deeper than he expressed in the above passage, however. Informed by the writings of Karl Marx and Thomas Kuhn, his book constitutes what he calls a "teleological materialist"²⁶³ critique of Anglo-American art historical practice which promotes the reincorporation of Semperian technological determinism into art history,²⁶⁴ and skilfully melds this with the practice of *Kunstgeschichte als Geistesgeschichte*:

Since the 1920s two generations of art historians have been studiously taught to shun the crass manifestations of the technical milieu while probing the intentions of the modern artist.... The tools of scholarly criticism -- stylistics, iconographical analysis, historical context, and formal analysis in the last fifty years -- remain as trusted now as ever. Yet they explain with diminishing clarity what has happened after 1800, and almost nothing of what has happened in sculpture in the last sixty years.²⁶⁵

The fact that this book has been overlooked by historians of art such as Goldwater, Rubin, Rosenblum and Hofmann, is probably due to its being seen as unorthodox historiographically and, even worse, as a polemical tract by a non-art his-

torian promoting the development of a certain type of art. But Burnham's overview of the history of the Modernist "idealist" sculpture he opposes is the most systematic and thorough application of the history of ideas to the history of art at the time. It deserves attention for that reason alone.

Modes of scientific idealism have consistently stimulated the development of non-representational sculpture: thus the so-called biomorphic idiom relied on vitalism; Constructivism found its impetus in the evanescences of modern structural engineering, mathematics and physics; Surrealist sculpture vested its validity in Freudian interpretations of the subconscious mind; while the object sculpture of today seeks transcendence through the seeming rationality of materialism colored with phenomenological considerations.²⁶⁶

In this paragraph, Burnham outlined a program for much art historical activity as it actually unfolded over the next two decades. There is little doubt that it was his command of the history of ideas and his espousal of a set of prejudices completely different from those dominant in the discipline which resulted in this achievement.

Burnham's text is important because it is the first which, at one and the same time, conceptualizes "Vitalist Sculpture" as a stylistic trend in Modernism and provides a detailed discussion of the history of Vitalist philosophies and criticism in relation to Modernism, and of the expression of Vitalist ideas through biomorphic Modernist sculpture. Its limitations from the point of view of this project are that Burnham (since he was writing on sculpture) does not make the relevant connections between this sculptural style and Modernist painting or photography, and that -- while he discusses the organic metaphor -- he does not treat the naturamorphic analogy.²⁶⁷ Still, his and Ritterbush's achievement are academically solid, and -- since Ritterbush wrote mostly of painting -- they are complementary. One would have expected them to stimulate art historical research on biomorphic Modernism, given the renascence of *geistesgeschichtlich* art

historical approaches. With the start of the 70s the time seemed ripe for the application of Goldwater's, Hofmann's, and particularly Ritterbush's and Burnham's ideas on biomorphism in Modernism to the production of a more incisive art historical treatment of biomorphic Modernism. This opportunity was not taken, however. Or rather, the one art historian I know of who tried to take advantage of this opportunity produced disappointing results.

iv. *Kunstgeschichte als Geistesgeschichte*

In his 1973 dissertation "Biomorphism in American Painting," Robert Metzger adapted aspects of the historical structure which Alloway had constructed in his articles, and which Ritterbush had developed in *The Art of Organic Forms*. While Ritterbush evidently alerted him to the Goethean, *naturromantisch* background of organic forms, and to the interest which some artists had in microscopy, Metzger uncritically accepted Barr's formal definition of biomorphic Modernism and his designation of Kandinsky as the canonical "biomorphic" painter. Without justifying his acceptance of them, Metzger treated Barr's decisions as the apodeictic standards by which all other uses of the term "biomorphic" and other practitioners of the style were to be judged.²⁶⁸ Even though, following its etymology, Metzger saw the origins of biomorphic forms in nature, he did not engage in a detailed discussion of the nature-centric content of this art, nor did he follow Burnham's cue and engage in an examination of the Vitalist (or, in broader terms, biocentric) context of its production. The importance of Metzger's work as the first strictly art historical treatment of biomorphic Modernism is diminished by his uncritical, uncontextual approach.

Following the exhaustion in the 1960s of totalizing formalist methodology, and the widespread adoption of Modernist art as a subject for art historical study in the 1960s, the 1970s and early 1980s saw a wholesale renewal of *Kunstge-*

schichte also *Geistesgeschichte* and of the application of the iconological method to the study of Modernism. After 1969 these viewpoints began appearing in profusion. Some of the earliest instances are Sixten Ringbom's book on the occult and abstract painting in 1970; Robert Welsh's article on Mondrian and Theosophy and Linda Dalrymple Henderson's on Cubism and the "Fourth Dimension" in 1971; Rose-Carol Washton-Long's article on Kandinsky and Carel Blotkamp's exhibition catalogue on the origins of abstraction in the Netherlands in 1972; Charlotte Douglas' article on Malevich and Kruchenykh in 1975 and, following his series of lectures in 1972, Rosenblum's *Modern Painting and the Northern Romantic Tradition* in 1975.²⁶⁹ By 1973, plans were inaugurated to organize an exhibition on the esoteric origins of abstraction at the Los Angeles County Museum.²⁷⁰ In an exhibition organized at the MOMA itself in 1976 -- signalling the end of formalist hegemony -- the parallels between the nature-centrism of American 19th-century landscape painting and Abstract Expressionism were detailed by John Wilmerding in his essay "Fire and Ice in American Art."²⁷¹

Typically, many of these writers had multi-disciplinary backgrounds. John Bowlt, who -- after Camilla Gray -- renewed the art historical examination of Russian avant-garde art, is a literary historian.²⁷² His student Charlotte Douglas initially studied Russian avant-garde literature and the history of the American occult, while Washton-Long first majored in Russian history, and received her B.A. in intellectual history.²⁷³

An important forum for the publication of some of this material early on, and a long-time venue for articles on nature, science, art and Organicism, was *The Structurist*, edited by Eli Bornstein at the University of Saskatchewan in Saskatoon. In special issues on "Light and Colour" in 1974 and on "Space/Time" in 1975, Bornstein included articles and translations by Bowlt and Douglas on the Russian avant-garde,

by Henderson on ideas of the "Fourth Dimension" in Russia, by George Beck on Bergson and Cubism, by the artist Alan Gussow on emergent Eco-Art, and by Bornstein on ecological aesthetics.²⁷⁴

Two crucial publications of 1983 were Henderson's book *The Fourth Dimension and Non-Euclidean Geometry in Modern Art*, a model of interdisciplinary studies, and the exhibition *Kosmische Bilder in der Kunst des 20. Jahrhunderts* held at the Kunsthalle in Baden. Siegmund Holsten's essay surveyed the interest both in the cosmos and the microcosmos of Modernist artists. His survey of the microcosmic interests of artists such as Klee, Baumeister, Miró, Tanguy, Masson and Ernst forms an important precedent for my own work.²⁷⁵ This trend culminated in 1986, after four conferences on the subject during the early 1980s, with the publication of the exhibition catalogue *The Spiritual in Art: Abstract Painting 1890-1985*. Edited by Judi Freeman and Maurice Tuchman of the Los Angeles County Museum of Art, this catalogue featured contributions by many of the major scholars of the neo-*geistesgeschichtlich* trend: Blotkamp, Bowlt, Douglas, Henderson, Washton-Long, Ringbom and Robert Welsh, among others.²⁷⁶

v. Biomorphicism

While this neo-*geistesgeschichtlich* art historical current validated the kind of historiography which led Burnham to connect Modernism and Vitalism, and Ritterbush to link Modernism and scientific imagery, as a style biomorphicism continued after 1969 to be unpopular, hampering research on it. Work was, however, initiated on individual artists such as Arp, Dove, Ernst, Kandinsky, and Klee, and Douglas and Bowlt were actively researching the Russian "Organicists" of Petersburg. In his 1977 article "Paul Klee and the Inner Truth to Nature," Sixten Ringbom hinted at the biologicistic sources of early-20th-century Modernist art.²⁷⁷ It was in her 1978 work on the formal language of Hans Arp's sculpture, for example,

that Stephanie Poley located the origins of Arp's biomorphic abstraction within the wider context of the art of Kandinsky, Tanguy, Brancusi, Matisse, Rodin, Moore and Miró, constructing in effect a formal survey of biomorphic Modernism.²⁷⁸ But apart from Metzger's dissertation and Herbert Christian Merrillat's amateur book on sculpture,²⁷⁹ little if anything was written on biomorphic Modernism as a tendency during that decade.

A major shift occurred with the publication in 1983 of Charlotte Douglas' article on Russian Organicism, "Evolution and the Biological Metaphor in Modern Russian Art."²⁸⁰ With this article Douglas constructed for Russian art a model of the cultural pattern I am investigating:

[M]any of the Russian avant-garde do not fit into the Cubist-Constructivist line of development as it is commonly understood ... [Filonov, Matiushin, Kulbin, Burliuk etc.] have singly or collectively been called "Russian Expressionists" or the "Alternative Tradition." For various periods between about 1910 and the early 1930s, they shared an anti-Cubist stance based in part on ... an organic aesthetics that was established in art ... by the dissemination and popularization of Darwin's theory of evolution and its subsequent neovitalist formulations.²⁸¹

This is to my knowledge the first conceptualization of the bioromantic cultural pattern by an art historian.

The following year a remarkable exhibition was held at the Scottish National Gallery in Edinburgh entitled *Creation: Modern Art and Nature*, which included Robert Rosenblum's article on Romantic views of nature in Modernist art and Jennifer Mundy's important "Form and Creation: The Impact of the Biological Sciences on Modern Art," the first general treatment of this subject since Ritterbush's book of 1968.²⁸² Mundy's article is particularly significant, for independent of Ritterbush and Douglas, and focusing her attention on Parisian art, she recognized the importance of microscopic photography, scientific film and organicist ideology to the shift in aesthetics which occurred during the interwar years.

Moreover she was the first scholar to suggest the relevance of this shift to current discourses on anthropocentrism, environmental degradation and genetics.²⁸³

After this, a series of studies appeared in the United States, Britain, Germany and France of direct relevance to the bioromantic cultural pattern:

In 1984 Verdi's book on *Klee and Nature* was published, which led in 1990 to an exhibition on Klee's relationship with the natural held at the Saarland Museum in Saarbrücken.²⁸⁴

In 1985 Sherrye Cohn's 1982 dissertation on Arthur Dove appeared in book form as *Arthur Dove: Nature as Symbol*, a first-rate study which has not received the attention it deserves.²⁸⁵ Cohn's dissertation and monograph are crucial to my approach to the study of biomorphic Modernism, as she discusses Dove's biomorphic Modernist oeuvre for the first time in its proper contexts of Nature Romanticism, photography and biological science, and -- taking into account the work of Ritterbush and others -- she includes a thorough discussion of organic form and the organic analogy. Though, according to the fashion of the time, she over-emphasizes Theosophy at the expense of fin-de-siècle biologicistic nature-centrism ("biocentrism") as a source for Dove's thinking, her 1985 monograph is the first publication to properly discuss the Romantic and organicist background to the work of a paradigmatic biomorphic Modernist, in effect placing his work into the "bioromantic" pattern.

Also in 1985 Vivian Endicott Barnett published an article both key and exemplary in which she documented what several authors before her had suggested, that the sources of Kandinsky's Parisian abstract paintings lay in scientific imagery. Barnett's work is significant not only because she points to specific sources for Kandinsky's paintings in his personal library, but because -- despite the dearth of documentary evidence -- she arrives at what I feel to be the right conclusion concerning Ernst Haeckel's importance in the genesis

of this imagery.²⁸⁶ That same year, Jeffrey Weiss' article on Kandinsky's biomorphic art extended into a prescient summary of biomorphic Modernism and its connection with scientific imagery. A promised article on the subject has -- as far as I can tell -- not materialized, however.²⁸⁷ In her dissertation completed the following year, Evelin Priebe -- building on hints by Giedion-Welcker -- discussed Kandinsky's work in the context of contemporary Neo-Vitalist ideology, particularly Bergson and Klages, discussing in detail for the first time Kandinsky's debt to Bergson.²⁸⁸ Harriet Watt's article "Arp, Kandinsky, and the Legacy of Jakob Böhme," in *The Spiritual in Art* catalogue of 1986, contributed to our understanding of the *naturromantisch* background of biomorphic Modernist works by those artists.²⁸⁹

The mid-80s also saw the publication of a series of studies of Arp's relation to nature and biomorphism. Thus, Rolf Wedewer published his article on Arp's Monist conception of nature in 1985; Janet Lindsay discussed that topic within the context of a discussion of Arp's sculpture in an article of 1984; and in a book and article based on her 1987 dissertation, both published in 1990, Margherita Andreotti discussed Arp's biomorphic sculpture in the context of contemporary biomorphic Modernism.²⁹⁰

In a 1987 essay Thomas Brandt analyzed the shift in formal strategies from geometric forms to curvilinear ones in the oeuvres of some painters after about 1930, citing a return to nature and the irrational among reasons for this shift.²⁹¹

The Linda Henderson student Janice Schall's dissertation "Rhythm and Art in Germany, 1900-1930" was completed in 1989, and though I encountered it only halfway through my own research, it has been an important source for my work. Through her equation of rhythm with the vital principle,²⁹² Schall has traversed much territory to do with biocentrism: "rhythm was associated with three fundamental principles: order, unity, and the life impulse itself."²⁹³ While I have focused

my work on the concept, however, Schall has examined the principal trope of the vital force's manifestation. Her research on Klages, Haeckel, and the *Wandervogel* movement is pioneering within the realm of Anglo-American art history. Though her dissertation was thematically rather than stylistically based, and though she begins her discussion earlier than I do, she has noted biomorphic stylistic affinities among artists interested in the unifying principle of nature: "Despite stylistic differences, all of these artists believed in the unifying force of nature's rhythms. Their paintings, drawings, and prints reflect this belief formally.... There is a prevalent but not exclusive use of curvilinear rhythms."²⁹⁴ Schall's work forms the basis for the study of "Bioromantism" in Germany.

Though she had first raised the biomorphic abstraction/nature problematic of Parisian interwar abstract painting in her 1978 exhibition catalogue on *Abstraction-Création*, Gladys Fabre developed this notion in her "Art de Synthèse," published in 1990.²⁹⁵ In this crucial article, based on the critical writings of Geoffrey Grigson and Anatole Jakovski, as well as on the conception by Hans Erni for the 1935 exhibition *these antithese synthese* held at the Kunstmuseum in Lucerne, she formulates a model of 1930s Paris-centred Modernism which shows commonalities with Kállai's formulation of the *Bioromantik* cultural pattern. According to this view, Parisian, Swiss and English interwar art is seen as struggling with the opposition between the artistic tendencies represented by the Paris groupings *Abstraction-Création* and Surrealism and their formative impulses: antinomies such as appearance/reality, abstraction/representation, microcosm/macrocosm and spirit/nature. Following the title *these antithese synthese*, she terms the biomorphic art which is the synthesis of these antinomies, *Art de Synthèse*. Fabre was the first French historian to sketch out the interest which interwar French artists and publishers had in scientific, especially microscopic,

photographs and films.²⁹⁶ Because she focuses on Paris, biocentric ideologies do not play a major part in her formulation of the problem, and she deals neither with German, Eastern European and North American production, nor with Kállai's writings. However, "Art de Synthèse" is the first attempt by an art historian to conceptualize this cultural pattern on both the *theoretical* and *international* planes.

Since 1983, building on the tradition established by John Baur at the Whitney Museum, a series of exhibitions treating American biomorphic abstract painting was organized, reflecting the revival of the style in the United States during that time. One of the most historical of these, Lisa Phillips' exhibition "Vital Signs," held at the Whitney Museum in 1988, was conceived by Tom Armstrong, Baur's successor as director of the Whitney, as an extension, a "reinterpretation" of Baur's project of three decades back.²⁹⁷ By incorporating Baur's awareness of the importance of natural themes to American Modernism, Burnham's cultural history, and a critical usage of the formalist stylistic category of "organic abstraction" into her approach, Phillips' work paralleled the complex approach Douglas and Fabre were taking at the time, and which I take in this dissertation. Her introductory essay touches on everything from the importance of imagery imported from the discourses of science to the crucial role played by Vitalism: it is a model of the cogent expression of a vast theme. The exhibition "Natural Forms and Forces" was also based on Burnham's conceptualization.²⁹⁸

In 1990-92 Christa Lichtenstern published an account of the influence of Goethe's theories of metamorphosis on art since the 18th century, including biomorphic Modernism.²⁹⁹ Most importantly from the point of view of biomorphic Modernism, in the second, 1992 volume of *Metamorphose in der Kunst des 19. und 20. Jahrhunderts*, Lichtenstern not only discusses the conceptual origins of much biomorphic Modernist art in Goethe's Romantic idea of natural metamorphosis but, in a sec-

tion entitled "Biomorpher Formenwandel," elaborates Brandt's discourse, and specifically discusses the formal origins of biomorphism in the art of Arp, Picasso and Moore.³⁰⁰ In her entry on "Biomorphism" for the *Dictionary of Art*, following common practice, she attributes the modern usage of the term within the artistic context to Barr rather than to Grigson. However, she concludes that though "biomorphism never resulted in a style as such, it remained an important tendency through the 1940s in unifying otherwise diverse stylistic innovations."³⁰¹ Though I suspect she meant to employ the word "movement" rather than "style" in this sentence, this is one of the strongest statements made on biomorphic Modernism since the 1970s.

The relevant literature on Moholy-Nagy, his New Vision, and on the biocentric Constructivist discourse, is treated in Chapters Three, Four and Five. Given Ernő Kállai's importance to my work, and the way that Chapter Five is structured, it is more important to engage here in a review of the literature on him. Possibly because of his nationality and his absence from the post-war scene, until recently West German historiography has not been as kind to Kállai as his importance to the art criticism of the Weimar Republic warrants. Because he was not a Communist, moreover, neither East German nor Hungarian art history dealt with him during the 50s and 60s, not even at the time of his death in 1954.

With the relaxation of limitations imposed on art historical subject matter in Hungary, and with the acquisition of the lion's share of Kállai's papers by the art historical Archive of the Hungarian Academy of Sciences in the early 1960s, interest has been rekindled in Kállai, one of the most significant of Hungarian art critics. Thus in 1963 an article appeared on letters from the Kállai *Nachlass* with connections to the Bauhaus, in a special Bauhaus issue of the Archive's yearbook; in 1965 Lajos Kassák published a short remembrance of the critic; and in 1967 a gravestone was dedicated to

Kállai.³⁰² It is noteworthy that the first public presentation of a text on Kállai -- in August 1974 -- was by an historian of medicine, and that it focused on *Bioromantik* and the naturamorphic analogy.³⁰³ It was in January of the following year that the Hungarian Artists' Association held its memorial evening to mark the twentieth anniversary of Kállai's death, with talks by three pioneers of Kállai studies, Éva Körner, Júlia Szabó and Éva Forgács.

By August of 1975 Szabó, then curator of the Archive where Kállai's papers were, published the first art historical article devoted to Kállai, and soon after Éva Forgács's first article appeared on Kállai, followed in 1981 by an anthology of Kállai's writings, and other writings by her since.³⁰⁴ This was followed by three exhibitions related to Kállai: one memorializing him in 1982, a show of works from his collection in 1984, and another in his honour at the Budapest *Kunsthalle* in 1986.³⁰⁵ Gábor Pataki began working on Kállai in the early 80s in the context of his research into Kállai's influence on the post-World-War-II Hungarian avant-garde. As a concomitant of this focus Pataki concentrated his research efforts on Kállai's *Bioromantik* conception.³⁰⁶

In English, Forgács published an article on Kállai in the *New Hungarian Quarterly* in 1976, while my article and translation of part of his last treatment of *Bioromantik*, *A természet rejtett arca* [The Hidden Face of Nature], appeared in 1984. It was the first to focus attention on *Bioromantik*.³⁰⁷

In German, Tanya Frank's anthology of some of Kállai's German writings appeared in 1986, along with a study of his work in the German context, while Hubertus Gassner examined Kállai's theory of Constructivism in his exhibition catalogue *Wechselwirkungen* of the same year, placing Kállai's writings into their international context for the first time.³⁰⁸ A conference organized jointly by the Hungarian Academy of Sciences and the Budapest Goethe-Institut in October of 1991 commemorated the one hundredth anniversary of Kállai's birth;

all active Kállai scholars participated, including two who had begun writing their doctoral dissertations on Kállai the previous year.³⁰⁹ Gassner mounted a session on Kállai at a conference held in Kassel in 1992, some of the papers of which were published in an anthology that same year.³¹⁰ While the first generation of Kállai scholars (Szabó, Körner, Forgács, Frank, Gassner) tended to privilege Kállai's concern with International Constructivism in their research and writing -- and some, like Frank and Bromig, working from a Marxist standpoint, saw his post-Constructivist writing as a kind of reactionary tendency of disillusionment³¹¹ -- most members of the second generation (Botar, Pataki, Wucher) also valorized his conception of *Bioromantik*.³¹²

c. Photographic and Design History

i. "Poetics of Bourgeois Wonder"

Developments directly relevant to my project began in the field of photographic history and aesthetics towards the end of the 1970s. In 1978 the Irish-American physician and art critic Brian O'Doherty's preface to the volume of Lewis R. Wolberg's art micrographs appeared. Based on Ritterbush's *The Art of Organic Forms*, O'Doherty's brilliant essay placed art micrography and the fascination with the microscopic into its proper context of nature Romanticism, Haeckelian Monism, Organicism, and Modernist aesthetics. O'Doherty writes of the

poetics of bourgeois wonder. This wonder is habitually inseparable from the microscopic. It is composed of a somewhat routine sense of miracle, informed by delectation and a quasi-religious sense of a higher order revealed by the microscopic.³¹³

He also takes on the task of writing an aesthetics of microscopic photography and its relations to Modernist painting, what he refers to as the "fallacy of correspondences." O'Doherty rejects the Jungian, psychobiological explanation for the naturamorphic analogy as "idealist," and therefore untenable.

Invoking a Neo-Semperian technical-determinist argument instead, he points out the possibility that the scientific image analogy, "instead of being a remarkable invention, is in fact inevitable. Not because of cosmic magnitudes, but simply because of the problems of inventing form on a surface."³¹⁴ Just in case there is an historical accounting for the phenomenon after all, however, he calls for old-fashioned art historical research:

Is it too obvious to suggest that artists, who are notoriously intelligent and searching, might, at the beginning of Surrealism, have acquainted themselves with the results of a century of microscopic morphology? Deeply immersed in organicism, it seems unlikely that artists would not be aware of its forms. The popular science books of the late nineteenth century, when such artists were young, abounded in such illustrations. An examination of artists' journals and libraries from this point of view is indicated.³¹⁵

As with Ritterbush and Burnham, it was the outsider, the doctor-critic O'Doherty, who asked the crucial question.

ii. Germany

The work most relevant to the subject of this dissertation was carried out by German photographic historians, however. In 1979 Jan-Christoph Horak and Ute Eskildsen assembled a volume on the "Film und Foto" exhibition held in Stuttgart in 1929. In her essay Eskildsen traced the history of photographic exhibitions in Weimar Germany.³¹⁶ It was the German Marxist literary historian Gert Mattenklott, who, in a remarkable essay on the metalwork instructor and amateur photographer Karl Blossfeldt, asked the important questions and sketched out a plan of research into the relations between close-up nature photography, scientific photography, biocentric ideologies and biomorphic Modernism. Mattenklott traced the aesthetics of Blossfeldt's photographs -- originally taken as patterns for his students at the turn-of-the-century -- back to Semper's biological materialism, and linked it to

Haeckel's contemporary Monist aestheticization of scientific imagery, to the organicist *Jugendstil* aesthetics of August Endell and Henry van de Velde, to photographic pattern books of nature, and to nature photography. All this, he shows, prepared the way for the Weimar German aestheticization of scientific and close-up nature photography, the subject I treat in Chapters Three and Four.³¹⁷ Eskildsen and Mattenklott helped initiate a renewed appreciation of Weimar German *Neue Sachlichkeit* photography.

Based on Mattenklott and Robert Schmutzler's prescient research of the early 60s, Haeckel's and his disciple Wilhelm Bölsche's influence on *fin de siècle* aesthetics and applied art was seen in a positive light in Siegfried Wichmann's 1984 book *Jugendstil Art Nouveau*,³¹⁸ and in a negative one in Christoph Kockerbeck's 1986 Marxist interdisciplinary study *Ernst Haeckels "Kunstformen der Natur" und ihr Einfluss auf die deutsche bildende Kunst der Jahrhundertwende*.³¹⁹

Mattenklott's work inspired an elaboration of his line of research by photographic historian Thomas Kröger in 1990, which in turn elicited a critique by Christian Bromig.³²⁰ Much as I began to do several months before the appearance of Kröger's article, Kröger, using Kállai as his starting point and focusing on Germany, attempted to describe a broad cultural pattern of biomorphic tendencies in art between the wars and to analyze the nature-centric ideologies underlying that pattern. Also as I have, Kröger integrated biomorphic Modernism into a discussion of photography, a tendency latent in Kállai's writing, but not worked out in detail:

Der in den dreissiger Jahren bei vielen Künstlern verbreitete Hang, eine auf biomorphen Ur- und nicht-stilisierten Naturformen gegründete Kunstsprache zu entwickeln, ist nicht nur bei vielen Malern dieser Zeit (u.a. Jean Arp, Willi Baumeister, Max Ernst, Wassily Kandinsky, André Masson, Paul Klee), sondern auch im Werk so unterschiedlich arbeitender Fotografen wie Blossfeldt, Renger-Patzsch, Fuhrmann ... anzutreffen.³²¹

Kröger accepted the interdisciplinary nature of this work, and just as Ritterbush, Burnham, Douglas and Fabre had done (though without knowing of their publications), he began to sketch out a complex model of the interacting phenomena involved. Kröger's article was important to me at the time in providing leads in the German literature. What was most exciting about Kröger's article was that, like me, he also pinpointed Kállai as the one whose theorizing was central to approaching biomorphic Modernism.

Bromig finds fault with several aspects of Kröger's article: the ahistoricity of Kröger's decision to discuss phenomena over a thirty-year time span, his failure to place what he discusses into its social and political contexts, and his alleged misunderstanding of Kállai's intentions foremost among them. Bromig offers his own Marxist-psychoanalytical explanation for the phenomenon, suggesting, like Tanya Frank before him, that *Bioromantik* was a kind of sublimation of political opposition to the Rightward shift in Germany:

Sie privatisierten oder besser: psychologisierten die heraufziehende Katastrophe, gegen die sie anders, etwa durch politische Parteinahme und Opposition, nichts mehr auszurichten vermochten.... Mit dieser quasi-existentialistischen "Ikonographie" des Innen- und Urlebens der Natur, die das Rätselhafte und Nichtdarstellbare zur Darstellung zwingt, glaubten jene Künstler der Kompromittierung ihres Schaffens durch die offizielle Kunstdoktrin und ihrem Vasallen, dem gesunden Volksempfinden, entgegen zu können.³²²

Though I agree with Bromig that it is important to discuss cultural phenomena in their wider contexts, the problem with his explanation is that it does not account for the similar cultural patterns (not described by Kröger) arising contemporaneously or slightly later in Britain, France, the United States and other countries with very different political circumstances at the time. Nor does it account for the origin of the pattern in the mid-twenties, before the Nazi menace became acute, and -- as Bromig himself notes -- for its con-

tinuance after the war.³²³ This is not to say, of course, that there is not a political dimension to *Bioromantik*. There surely is, and Kállai was aware of it.³²⁴ But in addition to the rise of the Right in the early 30s, the origins of *Bioromantik* are also linked to anti-modernity in general, to the turn-of-the-century *Reformbewegung*, to biocentric Anarchism and, most importantly, to the rise of an ecological consciousness. The *forms* of biomorphic Modernist art, furthermore, cannot be completely accounted for through historical or psychological, i.e. contextual, conditions alone. Formal sources such as scientific imaging must be invoked as well. As I hope to show in Chapter Two, the cherished Left-Right binary political schema is less than adequate in accounting for this complex phenomenon. While Bromig is correct to criticize Kröger for his failure to even invoke the political context of biomorphic Modernism, the context of *Bioromantik* was, as I see it, also very much more complicated than Bromig allows.

An illustration of the inadequacy of purely political/psychological accounts of biomorphic Modernist style is provided by Romy Golan's chapter "A crisis of confidence from machinism to the organic" in her book *Modernity and Nostalgia*.³²⁵ In this chapter she attempts to show how Léger's and Le Corbusier's biomorphic Modernist (what she terms "organic") painting after the mid-20s was part of a general retrenchment from machine-age aesthetics emblematic of the privileging of modernity, towards what was in effect an anti-modernist trend towards the organic and the rural. While I think that her's is one of the best analyses of the political dimension of inter-war French art, she makes no attempt to explain the specifically *modernist* biomorphism of Léger's painting as opposed to the agrarian landscapes by formally conservative painters such as Robert Lotiron, Roland Oudot and Gérard Cochet, with which she compares, and indeed groups, Léger's and Le Corbusier's work. Part of the problem is that she does not try to define her usage of "organic," another is that she does not see it as

troublesome that Léger's and Le Corbusier's work does not in the least resemble the style of the conservative rural scenes with which she compares them. Finally, she does not problematize the actual political affiliations of Léger (a Socialist), or Le Corbusier (a typical representative of "third-way" interwar politics), which do not fit her binary political schema of Left/Right, progressive/reactionary, modernist/anti-modernist.³²⁶

The shortcomings of Golan's analysis became most apparent in the way she treats E.A. Séguéy's 1931 call made in *Arts et Décoration* for applied artists to turn to microscopic imagery for inspiration. Apart from her failure to locate Séguéy's text within its proper context of the contemporary discourse on microscopy and nature, it does not seem to trouble her that Séguéy's recommendation that artistic usage be made of microscopic images of both wood and metal as "organic" inspirations, does not fit the discourse of *ébinistes* vs. *machinistes*, which she structurally locates within the antimodernist vs. modernist, "organic" vs. machine-age, retrenchment vs. progress, Right vs. Left antimony she constructs for interwar France.³²⁷ Her perceptive conclusion, that by comparing these micrographs "Séguéy manages, by stressing the organic texture of both, to reclaim metal and glass under the taxonomy of nature," does not accord with the overall structure of her argument and is not comprehensible within that context.³²⁸

The most extensive publication to date dealing with the association between Neo-Vitalism and biomorphic Modernism is the 1994 exhibition catalogue *Élan Vital oder das Auge des Eros*, published in conjunction with an exhibition of the same title, curated by Hubertus Gassner.³²⁹ Because of the proximity of the theme of this exhibition to my own work, it is important to include some remarks on the histories of this and my own project. Building on an interest in Kállai's conception of *Bioromantik* going back to 1979,³³⁰ and after consultations with among others, Gassner himself, this dissertation was

undertaken in November of 1990. I discussed my ideas linking biocentric ideologies, biomorphic Modernism, Modernist close-up nature photography, and scientific photography with Gassner in Kassel in the summer of 1992, and in October of that same year in Budapest at the Kállai Centenary Conference. On 24 February 1993, I gave a lecture on the subject, sketching out the elements of the cultural pattern, and Kállai's role as the first to describe it.³³¹ That fall Gassner undertook this exhibition project with Christoph Vitali at the Haus der Kunst in Munich. Forced on short notice to fill in the revived institution's inaugural exhibition slot vacated through the sudden cancellation of another project, the exhibition opened and the catalogue appeared by the following May.³³² I was informed of it by staff at the Stiftung Hans Arp und Sophie Taueber-Arp e.V. at Rolandseck near Bonn shortly before it opened in May 1994.

The catalogue includes articles by Mattenklott on Vitalism in early-20th-century culture and by Wolfgang Kersten on Klee, a translation of Barnett's 1985 article on biological imagery in Kandinsky's Paris-period art, in addition to contributions by Gassner himself. A particularly welcome aspect of this catalogue is the publication (in German translation) of the Paris journal *Documents*, and the discussion of Georges Bataille's and Carl Einstein's writings of the early 30s in this context by Denis Hollier and Klaus Kiefer, a project begun by Mattenklott in his article on Blossfeldt of 1981 and by Rosalind Krauss in her contemporary writings on Surrealism.³³³ Given the short period of time at his disposal, Gassner appropriately chose to focus on four key artists in the show, Kandinsky, Klee, Arp, Miró and Calder, all of whom were either working in Paris, or whose work was mainly being shown there by the 30s. While he relates their production to Neo-Vitalist ideologies -- and Bergson in particular -- Gassner, who knows Kállai's work well, does not discuss Kállai in this connection.³³⁴ Though he focuses his discussion on Paris,

Gassner tends to privilege the German literature (Mattenklott, Lichtenstern, Kröger, Bromig), not taking into account the work of Gladys Fabre (who wrote on just this subject in 1990), or the related works by Ritterbush, Burnham and Charlotte Douglas. Apart from his treatment of Bataille's discussion of Blossfeldt, Gassner does not relate the biomorphic Modernist art to contemporary photographic developments, nor to scientific photography in any detail.

d. Literary Studies and the History of Science

[T]he historiography of vitalism has been paradoxical: bursting with narrow scholarship on the one hand (all sorts of studies of individual figures and works), matched by silence about its hold on culture on the other. (G. S. Rousseau 1992)³³⁵

With a few exceptions, such as the work of Burnham, Priebe and Kockerbeck, what has been largely missing from art historical studies is a treatment of the biocentric tradition. It is to the history of science and ideas, and to literary criticism, that we must turn to find material on the cultural impact of Neo-Vitalism and Organicism, to realize how important this subject has become over the past twenty years or so as a subject of research.

We have looked at the work of German literary historian Gert Mattenklott in the field of photographic history. Two other works of German literary history have appeared which establish the importance of Vitalism and Monism to early Modernist literature in specific, and to culture in general. In 1971 Gunter Martens -- independently of Jack Burnham -- published a crucial study which established the central role of Neo-Vitalist ideologies in the development of literary Expressionism.³³⁶ More than twenty years later, in 1993, Monika Fick published a study which did for "psycho-physical Monism" (*Leib-Seele-Einheit* as Hans Prinzhorn referred to it) what Martens had done for Vitalism: demonstrate its significance to the Modernist cultural phenomenon. While Fick touches

on the arts (Redon and Kandinsky), she does not deal with them in detail, dwelling instead on the more general thesis that the Monist idea of "spiritualized matter" or "materialized spirit" -- i.e. the unity of soul and body, of matter and spirit -- are key, ideas of early Modernist culture.

Ritterbush's importance to the history of biology has already been touched upon. His proposition of an essentially visual metaphor as being crucial to the development of modern biology was influential on other studies in the history of science, such as Donna Jeanne Haraway's *Crystals, Fabrics, and Fields: Metaphors of Organicism in Twentieth-Century Developmental Biology*.³³⁷ Haraway extends Ritterbush's basic insight: "At different critical points in the history of biology, the allegiance to concepts of organic form, borrowed heavily from poets and artists, guided the scientists' resolution of theoretical and empirical matters."³³⁸

The interest of Anglo-American literary historians in Organicism was given its original impetus by M. H. Abrams' 1953 book *The Mirror and the Lamp*.³³⁹ Since that time, and especially since the 1980s, there has developed a large literature on the Organicism of the Romantic poets, particularly Coleridge, and the Vitalism of late 19th-century writers. In 1972, George S. Rousseau of the English Department of UCLA published a crucial anthology entitled *Organic Form: The Life of an Idea*, which began to investigate the link between Organicism and Modernism as well.³⁴⁰ Rousseau's work derives from the intellectual circle around Marjorie Hope Nicolson, founder of the Literature and Science section of the Modern Languages Association, who was influenced by Arthur Lovejoy's seminal *geistesgeschichtlich* monograph of 1950, *The Great Chain of Being*.³⁴¹ Rousseau, one of Nicolson's students, has compiled an interdisciplinary bibliography on organic form up to 1970. This anthology includes an essay by Ritterbush which deals more directly than the 1968 catalogue with the history of the idea of organic form amongst philosophers and biologists.

Rousseau's anthology and Haraway's influence initiated a revival of interest in Organicism among cultural historians by the 1980s. A whole series of dissertations began appearing on the subject from about 1986 onwards, in the fields of literature, history and music. These dissertations dealt primarily with the 18th and 19th centuries.³⁴²

Rousseau's project in producing this anthology was extended by Frederick Burwick fourteen years later, in his anthology *Approaches to Organic Form*,³⁴³ which cast its net even wider in the field of cultural studies than Rousseau had done. Most importantly with respect to this study, in his article "'Such as the Life is, Such is the Form': Organicism Among the Moderns," Paul Douglass outlines the crucial role Organicism played in the development of Modernism. Burwick's student at UCLA, Douglass, had written his dissertation on Bergson.³⁴⁴ In it he notes not only the work of Abrams, Carlos Baker, and others in establishing the direct links between Modernism and Romanticism,³⁴⁵ but also the paucity of literature on Organicism in Modernist literature from Coleridge's time to that of T. S. Eliot³⁴⁶ and the denial of this heritage among the Moderns: "But though the Modernist aesthetics remain profoundly Coleridgean, and therefore quintessentially organicist, Modernist writers deny this heritage by breaking vehemently with Romantic pride, with Romantic faith in the innocence of expression."³⁴⁷ Indeed, Douglass sees in Organicism a basis for critiquing Deconstruction as a practice that does not find meaning in literature precisely because it does not view literary products as organic wholes.³⁴⁸

In 1992 Douglass teamed up with Burwick to edit the next in this series of publications in literary studies, *The Crisis in Modernism: Bergson and the Vitalist Controversy*.³⁴⁹ Here, the emphasis shifted from Organicism to Vitalism, and the volume offered a dazzling array of articles on the subject, from the Enlightenment, through Mikhail Bakhtin (commented

upon by George Rousseau), to Gilles Deleuze.

e. Post-Modernism and the Organic

Michel Foucault has said that this century might perhaps one day come to be known as 'Deleuzian'.... And if we are willing to grant Deleuze even a fraction of the significance Foucault would give him -- if, that is to say, Deleuze's contribution to post-structuralism is constitutive -- then we must confront the fact that post-structuralism offers us a sort of 'Bergson redux.' Certainly Bergson has furnished Deleuze with some crucial tools for his project of 'decentering,' 'multiplicity,' and 'tension'.... In *Bergsonism* .. Deleuze has taken up the cudgels for a time-worn cause: namely, the vitalist approach to philosophy.³⁵⁰ Bergson has become fresh material again, and the fact that he cannot be trapped in a narrow definition of naive vitalism makes the vitalist aspects of his philosophy all the more stimulating.³⁵¹

Even if Paul Douglass' text does not seem startling to some readers, it does give one food for thought. Indeed, there is something plausible about the notion that Deleuzian "decentering" is a variant of biocentric anti-anthropocentrism, even if the end-use of this concept was vastly different among biocentrists such as Ludwig Klages and Raoul Francé. Certainly, the until-recently-repressed lifelong fascination that Walter Benjamin had for Klages and his philosophy is a further indication of such seemingly impossible links. In his Bergsonian neo-vitalist/Pragmatist conception of art, Alexander Dornier finds it evident that "the artist's personality is no longer compounded of an eternal spiritual matter.... Therefore it is only natural that individual personality should have lost its value as ultimate, immutable and self-sufficient being.... The traditional autonomy of the individual ... strikes us today as obsolete, indeed as dangerous."³⁵²

With this in mind, it seems less strange that an institution as central to the Post Modernist project as Zone Books of New York has over the past decade published in translation or new editions Gilles Deleuze's *Bergsonisme*, Henri Focillon's

Bergsonian and materialist-Organicist *The Life of Forms in Art*, and the holist neurologist Kurt Goldstein's *The Organism*.³⁵³ Two of the editors-in-chief of *Zone*, the art historians Jonathan Crary and Sanford Kwinter, have also produced the central anthology of this Post Modernist neo-Organicism: *Incorporations*.

That Deconstruction includes *Lebensphilosophie* in its intellectual heritage is common knowledge, though it has been the radical, epistemologically critical Nietzsche and Heidegger that have been appropriated.³⁵⁴ Gianni Vattimo goes as far as to write that "it could legitimately be argued that philosophical post-modernity is born with Nietzsche's work... between 1874 and 1882,³⁵⁵ i.e. during the rise of modernity in general.

If all this sounds bizarre given the attack that Deconstructionists such as Paul de Man have conducted against "idealist" or "essentialist" philosophies, and against Organicism in particular, Richard Shustermann, in an analysis of this attack, has shown the fundamental identity of the central Saussurean/Derridean concept of *différance* and the core Organicist conception of "organic unity."³⁵⁶ In her article "Eco-Subjects," Verena Conley has traced the environmentalisms inherent in the writings of David Harvey, Paul Virilio and Félix Guattari, emphasizing that by 1988 Virilio held that after Chernobyl "The only struggle worth fighting for is a truly ecological struggle."³⁵⁷ But whether such a project is legitimized by Post-Modernism or not, it is time to examine the biocentric impulse to Modernism.

ENDNOTES

1. Meyer Schapiro, "Style" (1962) in Schapiro, *Theory and Philosophy of Art: Style, Artist, and Society. Selected Papers* (New York: Braziller, 1994), 87, 89.
2. Barbara Stafford, *Body Criticism: Imagining the Unseen in Enlightenment Art and Medicine* (Cambridge Mass.: MIT Press, 1991), 472.
3. See applications of Schapiro's ideas in, e.g., Robert Herbert, "Method and Meaning in Monet," *Art in America* (September 1979): 90ff and Richard Schiff, *Cézanne and the End of Impressionism: A Study of the Theory, Technique, and Critical Evaluation of Modern Art* (Chicago: Chicago University Press, 1984). A good summary of this approach applied to the art of Gauguin, the Fauves and the German Expressionists can be found in Gil Perry, "Primitivism and the 'Modern'," in Perry, Charles Harrison and Francis Francina, *Primitivism, Cubism, Abstraction: The Early Twentieth Century* (New Haven and London: Yale University Press and the Open University, 1993), 16-17, 46-47, 63.
4. Schiff, *Cézanne and the End of Impressionism*, xiv.
5. Udo Kultermann, *The History of Art History* (Abaris Press, 1993), 177. On Barr's reading of Fry, Bell and Barnes, and his turn to formalism, see Irving Sandler's Introduction in *Defining Modern Art. Selected Writings of Alfred H. Barr, Jr.* Irving Sandler, ed. (New York: Abrams, 1986), 11. I have added the Wölfflin student Siegfried Giedion to this list.
6. René Huyghe, *Formes et Forces. De l'atome à Rembrandt* (Paris: Flammarion, 1971), 27.
7. On "nature" as a cultural construct of the 18th century, see Chapter Two. While Kubler resists the biological metaphor in his book *The Shape of Time* (New Haven Conn.: Yale University Press, 1962), he cannot avoid it. On Göller, see Kubler, pp. 80-81. On Haddon's book, *The Evolution of Art*, see 2.d. below. This vein of formalist thinking is closest to what E. S. Russell, in his taxonomy of zoological morphological theories, refers to as "functional" or "synthetic." See the Preface, in his *Form and Function. A Contribution to the History of Animal Morphology* (London: John Murray, 1916), unpag. On Haddon, Focillon, David Clarke's *Analytical Archaeology*, and this line of artifact analysis, see also Philip Steadman, *The Evolution of Designs. Biological Analogy in Architecture and the Applied Arts*. (Cambridge: Cambridge University Press, 1979): Chapter 15.

8. Jean Molino, Introduction to Henri Focillon, *The Life of Forms in Art*, trans. Charles Beecher Hogan and George Kubler (New York: Zone Books, 1989), 26-27.

9. *Ibid.*, 25.

10. M. H. Abrams, *The Mirror and the Lamp* (New York: Oxford University Press, 1953), 168. For a critique of the "biological fallacy," see Steadman, *The Evolution of Designs*.

11. I am thinking here of approaches such as Robert Welsh's reading of abstract works in terms of "sacred geometries." See Robert P. Welsh, "Sacred Geometry: French Symbolism and Early Abstraction" in Maurice Tuchman and Judi Freeman, eds., *The Spiritual in Art: Abstract Painting 1890-1985* exh. cat. (New York and Los Angeles: Abbeville Press and Los Angeles County Museum of Art, 1986): 63-88.

12. Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge Mass.: October Books and MIT Press, 1990), 23.

13. On this subject see also James Elkins, "Art History and Images That Are Not Art," *Art Bulletin* 77, no. 4 (December 1995): 553-71.

14. Stafford, *Body Criticism*, 472-3 and *Ibid.*, 569.

15. Barbara Maria Stafford, "Presuming images and consuming words: the visualization of knowledge from the Enlightenment to post-modernism," in: John Brewer and Roy Porter, eds., *Consumption and the World of Goods* (New York and London: Routledge, 1993), 473.

16. *Ibid.*, 462.

17. I am thinking here not only of this tradition, but also of Moholy-Nagy's "New Vision" and education of vision, György Kepes' "Language of Vision" and the Herbert Read of *Icon and Idea* which argues that "the image always precedes the idea in the development of human consciousness." Liner notes, *Icon and Idea: The Function of Art in the Development of Human Consciousness* (New York: Schocken, 1965). Also: László Moholy-Nagy, *The New Vision* (New York: Norton, 1938) and György Kepes, *Language of Vision* (Chicago: Paul Theobald, 1944).

18. Kubler, *The Shape of Time*, 33ff.

19. As mentioned in the introduction, Dorner discusses the curved line as a "hieroglyph" of Becoming, of the new dynamic view of the world which came to the fore during the Romantic era. He includes artists such as Kandinsky, Klee, the abstract

(or as he calls them) "Romantic" Surrealists, Expressionists, the Art Nouveau, Munch, Klimt, Beardsley, Whistler, Gauguin, van Gogh, Böcklin, the Pre-Raphaelites, the Nazarenes, Runge, Friedrich, Blake, Flaxman and Fuseli in this category. Dorner, *The Way Beyond 'Art': The Work of Herbert Bayer* (New York: Wittenborn, Schultz, 1947), 90.

20. Huyghe, *Formes et Forces*, 251-56, 316-26. The well-informed amateur and dealer Malcolm Haslam, in his book *In the Nouveau Style*, discusses this curvilinear style from Blake to the Post-Modern, focusing on design (but including discussions of both biomorphic Modernist art and scientific and close-up nature photography), and defining it in terms of the Art Nouveau (Boston: Bullfinch Press, 1989), esp. Chapter Five.

21. Important in this connection is the French artist Eugène Grasset's monumental study of curved/curvilinear forms (both lines and solids), *Méthode de Composition Ornamentale. Tome Second. Éléments Courbes*. (Paris: Librairie Centrale des Beaux-Arts, n.d. [1905]). For the date of the book, see Anne Murray-Robertson, *Grasset: Pionnier de l'Art Nouveau* (Paris: Bibliothèque des Arts, and Lausanne: Heures, 1981), 117. Grasset's methodological approach to developing curvilinear decorative patterns and forms places him into the morphological/formalistic line of development. See also Henry van de Velde, "Die Linie," *Die Zukunft* 10, no. 49 (6 September 1902) and *Vom neuen Stil* (Leipzig: Insel-Verlag, 1907). On Van de Velde, see Chapter Three.

22. Though he does not mention Biomorphicism in this context, James Elkins points out the formal relations of fractal geometry to such a sequence, particularly its Rococo variant. See Elkins, "The Drunken Conversation of Chaos and Painting," *M/E/A/N/I/N/G* 12 (1992): 57-8.

23. For a spurious critique of the term "Biomorphic Abstraction" as redundant, see Robert Paul Metzger, "Biomorphism in American Painting," (Ph.D. dissertation, University of California at Los Angeles, 1973), 5-7.

24. Arnold Hauser, *Mannerism: The Crisis of the Renaissance and the Origin of Modern Art* trans. Erich Mosbacher with Arnold Hauser (London: Routledge & Kegan Paul, 1965), 19.

25. Martin Heidegger, "The Question Concerning Technology" in Martin Heidegger, *Basic Writings*, David Farrel Krell, ed. (New York: Harper and Row, 1976), 106.

26. Reported by Hattula Moholy-Nagy to the author, Ann Arbor, 7 April 1996.

27. On Read's neo-Lamarckian (i.e. teleological) biologicistic nature-centrism (in effect, biocentrism), see George Woodcock, *Herbert Read: The Stream and the Source* (London: Faber and Faber, 1972), 18: "There are many threads that unite Read's books in ways that are neither linear nor circular, and at the centre of every knot one finds the fact that his philosophy -- aesthetic or libertarian ... -- sets its roots always in biological reality, in the 'natural conditions of existence by means of which, as Read once remarked, a man 'can give an answer to most of the problems of life.'" On page 27 Woodcock writes that Read's concept of Anarchism was "...virtually identical with that of Kropotkin," the theorist of biologicistic Anarchism. For example, Woodcock quotes Read as writing that the "free society's" "ideal condition is 'the same as the ideal condition of any living body -- a state of dynamic tension'; it must allow itself to be 'stirred into the vibration and emanation of organic growth'." (p. 248) Read's teleological and neo-Lamarckian views on evolution were indebted to Bergson. On this debt, and on his valorization of Bergson's as "the only metaphysics that is based on biological science," see page 222 of Woodcock.

28. *Unit 1: The Modern Movement in English Architecture, Painting and Sculpture* was an anthology edited by Herbert Read (London: Cassell & Co., 1934). On Read's centrality to the London avant-garde of the time Geoffrey Grigson writes: "If there was a London centre of the new 'modernism', a centre of that centre was certainly the Mall Studio off Parkhill Road in which Herbert Read and his new, Edinburgh wife lived..." in Grigson, *Recollections: Mainly of Writers and Artists* (London: Chatto & Windus and the Hogarth Press, 1984), 56. See also Woodcock, *The Stream and the Source*, 25-6. *Axis* was the journal -- edited by Myfanwy Evans -- of this London Modernist circle from 1935 to 1937. On the circle, see Christa Lichtenstern, "Henry Moore and surrealism," *The Burlington Magazine*, 122, no. 944 (November 1981): 646.

29. David Thistlewood, *Herbert Read: Formlessness and Form: An Introduction to his Aesthetics* (London: Routledge & Kegan Paul, 1984), x.

30. Evident in his writings, this view is reinforced by Thistlewood, *Herbert Read*, xi, 41-5. For an early statement of Read's Worringerianism, see Read, *The Anatomy of Art* (New York: Dodd, Mead & Co., 1932), 50-54.

31. This is the way his dedication in his *The Philosophy of Modern Art* is phrased. (London: Faber and Faber, 1952), 7. Concerning Worringer's influence on English Modernism -- mainly through T. E. Hulme and Read -- see Geoffrey C. W. Waite, "Worringer's *Abstraction and Empathy*: Remarks on Its Reception and on the Rhetoric of Its Criticism," in Neil H.

Donahue, ed., *Invisible Cathedrals: The Expressionist Art History of Wilhelm Worringer* (University Park, Penn.: The Pennsylvania State University Press, 1995), 17 (with further references). On the importance of Worringer to Read and on Read's visit to Worringer in 1928, see also Woodcock, *The Stream and the Source*, 166-8.

32. Jack Burnham, *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of this Century* (New York: George Braziller, 1968), 69.

33. Wilhelm Worringer, *Abstraction and Empathy: A Contribution to the Psychology of Style* (1908) trans. Michael Bullock (New York: International Universities Press, 1953), 66-69.

34. Worringer, *Abstraction and Empathy*, 59-61. On this problem see also Burnham, *Beyond Modern Sculpture*, 69.

35. Worringer's account of the organic as related to empathy was based on a misunderstanding of Lipps, his source. See Waite, "Worringer's *Abstraction and Empathy*...", 24ff.

36. Traces of an awareness of this difficulty are apparent in Read's book *Art and Society* (London and Toronto: William Heinemann, 1937) for example, where after employing the terms "geometric" and "organic" he feels compelled to include an explanatory endnote: "So far as possible I propose to use geometric and organic, abstract and representational, as contrasted or antithetical terms" (pp. 24, 33, note 14).

37. After admitting only of "Cubism" (abstracted Modernist representational art) and "Abstraction," which -- following Worringer -- he defines in geometrical terms alone, Read writes: "It may be objected that a type of modern art exists which has no relation with natural forms or objects, but which is nevertheless not an affair of geometry... It is represented by certain phases of Picasso, by Arp, Miró and Max Ernst. But for this type of art we have the accommodating term super-realism [Surrealism]... I mean no disrespect to [Surrealism], but obviously a type of art which claims to break down the barriers between the conscious and the unconscious, which uses both conscious and unconscious symbolism, can be made the foster-mother of many *enfants terribles*." Herbert Read, "Our Terminology," *Axis 1* (January 1935): 8. On Read's attitude towards Surrealism during this period, see Thistlewood, *Herbert Read*, 78-79. On Read and Roland Penrose as the "leaders" of the English Surrealist group in the late '30s, see Dawn Ades, *Dada and Surrealism Reviewed* exh. cat. (London: Arts Council of Great Britain, 1978), 350. See also p. 348 on Read's complicated, ambivalent attitude towards Surrealism.

38. Read, *Art and Society*, 259-60. Note that, like Kállai, in principle Read included geometric abstraction among the artists he is referring to here.
39. Dylan Thomas, "The Force that Through the Green Fuse Drives the Flower," *Collected Poems 1934-1952* (New York: New Directions, 1971), 10. On Thomas' Monist Vitalism, see M. H. Abrams, et al., eds., *Norton Anthology of English Literature* Third Edition, Volume 2 (New York: Norton, 1975), 2361-62. It comes as no surprise that Thomas has been seen to be part of the Neo-Romantic trend in British culture of the time, and that he took part in the opening of the International Surrealist Exhibition at the Burlington Gallery in London in 1936, which must have at least superficially put him in touch with the Read circle. See Constantine Fitzgibbon, *The Life of Dylan Thomas* (London: Dent & Sons, 1965), 215-16 and Jacob Korg, *Dylan Thomas* (New York: Twayne, 1965), 17-18, 179-80. Thanks to Cynthia Messenger for the references on Thomas. Perhaps Thomas, like D. H. Lawrence, read the Monist Vitalist Ernst Haeckel as a boy. On Lawrence, Haeckel and Vitalism, see Anna Bramwell, *Ecology in the 20th Century: A History* (New Haven: Yale University Press, 1989), 112-13.
40. For a discussion of Moore's and the majority of the members' biomorphic Modernism see Herbert Read, "Introduction," *Unit 1*, 16. See also Read's reminiscence of the circle starting in 1933 in his "A Nest of Gentle Artists," in Benedict Read and David Thistlewood, eds., *Herbert Read: A British Vision of World Art* exh. cat. (Leeds: Leeds City Art Gallery, 1993), 59-61; and Lichtenstern, "Henry Moore and surrealism": 645-7.
41. Hepworth, statement in Read, ed., *Unit 1*, 20.
42. *Ibid.*, 30.
43. *Ibid.* Concerning the influence of natural objects on British artists at this time, see also Anna Gruetzner, in *Dada and Surrealism Reviewed* (London: Hayward Gallery, 1970), cat. entry 14.83 and Lichtenstern, "Henry Moore and surrealism," 647-51.
44. Karl Blossfeldt, *Art Forms in Nature. Examples from the Plant World Photographed Direct from Nature* (London: A. Zwemmer, 1929). The English edition of *Wundergarten der Natur. Neue Bilddokumente schöner Pflanzenformen* (Berlin: Verlag für Kunstwissenschaft, 1932) was apparently presented by Zwemmer in English as volume two of *Art Forms in Nature* in 1932. (Paul Nash, "Photography and Modern Art," *The Listener* 3 (1932): 130-31) While I have not seen this 1932 English edition, Paul Nash's review makes it clear that it is the English version of *Wundergarten der Natur*, and not an actual "second volume" of

Kunstformen der Natur, the 1929 English edition of which was complete. The popularity of the publications is indicated by a second printing of the 1929 *Art Forms in Nature* in 1935. (See the advertisement in *Axis* no. 4 {1935}, unpag.)

45. Reported by Nash in "Photography and Modern Art," 23. This is a very early example of the naturamorphic analogy being presented in an exhibition format, and is concurrent with Kállai's plans for such an exhibition at the Leipzig museum. (On that, see below.) However, because the juxtaposition by Wellington at Zwemmer's was -- following Blossfeldt's own intention of providing models for applied artists -- of close-up photographs and items of furniture, one cannot regard it as having the same importance as Kállai's plans of 1932 and their realization in 1947 to present scientific photographs in conjunction with actual items of Modernist art. In a sense Wellington's installation is a circular projection of Blossfeldt's original intentions with respect to his photographs.

46. See Nash, "Photography and Modern Art," and R. H. Wilenski, *The Meaning of Modern Sculpture* (London: X, 1932), chapter X, "The Modern Sculptor's Creed." Lichtenstern refers to this English reception and details Moore's relations with Wilenski in her "Henry Moore and surrealism," 651, note 58.

47. Watson-Baker, *World Beneath the Microscope* (London: The Studio, 1935), plate 3.

48. Gaunt, Introduction, Watson-Baker, *World Beneath the Microscope*, 8-9. Watson-Baker's book appeared in a series entitled "The New Vision," paying open homage to Moholy-Nagy's formulation. We will see how Moholy-Nagy's New Vision was determinative in promoting the naturamorphic analogy in Chapter Five.

49. J.P. [John Piper], review of Watson-Baker, *World Beneath the Microscope*, *Axis* no. 4 (1935): 28.

50. The writer may have been the editor, Myfanwy Evans. *Axis*, no. 4 (1935): unpag.

51. Man Ray, *Self Portrait* (1963), quoted by Gladys Fabre in "Synthetic Art" in *Paris. Arte Abstracto, Arte Concreto. Cercle et Carré 1930* exh. cat. (Valencia: IVAM, 199), 397; and Woods, review of Henry Moore's exhibition at the Leicester Galleries, *Axis* no. 7 (1936): 30.

52. Geoffrey Grigson, *Henry Moore* (London: Penguin Books, 1944), 7-9. Note that Parker Tyler would do this briefly in the New York publication *View* the following year. On Tyler, see below.

53. Herbert Read, *Education Through Art* (New York: Pantheon, 1945), 16.
54. Grigson, "Comment on England," *Axis* no. 1 (January 1935): 8-19. Since the text appeared in January of 1935, it might be assumed that Grigson wrote it in 1934. Ernő Kállai and Carola Giedion-Welcker, by valorizing such production in their criticism of 1932 and 1934 respectively, were in effect promoting its production within the German-speaking part of Europe, though they did not do so explicitly. On them, see below.
55. Another term proposed in this circle for biomorphic abstraction was "Subjective Abstract Form." See: J. and M. Thwaites, "Surrealism and Abstraction -- the search for subjective form," *Axis* no. 6 (1936), 22-23.
56. The emphasis is mine. Grigson, "Comment on England," 8.
57. Grigson, "Painting and Sculpture Today," in Grigson, ed., *The Arts To-Day* (1935) (Port Washington N.Y. and London: The Kennikat Press, 1970), 108.
58. He did this in relation to sculpture in a text on Moore in *The Philosophy of Modern Art*, 202, 207. Thistlewood follows this development in detail in *Herbert Read*, Chapter Four. Burnham's account of it in *Beyond Modern Sculpture* (pp. 71-74) is shorter, and necessarily more superficial, but it was the first time anyone had attempted it.
59. See Herbert Read, "The Vital Image," chapter five in *A Concise History of Modern Sculpture* (New York: Praeger, 1964). Read refers to vitalistically informed sculpture as simply "Vitalism." He does not identify an equivalent category in his *A Concise History of Modern Painting* (New York: Praeger, 1959 and later editions).
60. For traces of Worringer's schema in Grigson's discourse, see Grigson, "Painting and Sculpture Today," 73: "All art exists in a tension between geometry and what affects the beholder as being organic or vital." On Read and Grigson, see James King, *The Last Modern: A Life of Herbert Read* (Weidenfeld and Nicolson, 1990), 122-23 and Grigson, "Herbert Read," in Grigson, *Recollections, mainly of writers and artists* (London: Chatto, 1984), 56-59.
61. Moore was untroubled by the details of Worringer's text. See his statement in *Unit 1*, 29: "Asymmetry is connected also with the desire for the organic (which I have) rather than the geometric. Organic forms though they may be symmetrical in their main disposition, in their reaction to environment, growth and gravity, lose their perfect symmetry."

62. This term seems first to have been employed in published form in "Comment on England," which, since it appeared in the January 1935 issue of *Axis*, was probably written late in 1934. He explained its use and origin fully in his concurrent "Painting and Sculpture Today," published at some point in 1935.

63. Grigson, "Painting and Sculpture of Today," 93.

64. *Ibid.*, 81.

65. Grigson, "Comment on England." A similar categorization was promoted by Myfanwy Evans in his article "Order! Order!," in which he saw Picasso, Arp, Giacometti, Moore, Héliou, Hans Hartung, John Piper, and a few others as belonging to neither the Surrealist nor the purely Abstract categories, but forming a tendency on their own. *Axis* no. 6 (1936): 8,

66. Grigson, *The Arts To-Day*, 92.

67. Fabre, "Synthetic Art," 399.

68. Signs of this discourse are to be found throughout Europe in the mid 30s. See, e.g., the articles by Myfanwy Evans, S. John Woods, J. and M. Thwaites and John Piper in *Axis* no. 6 (1936). Kállai already anticipated it in his "Zurück zum Ornament" (*Forum*, 1932: 226).

69. Erni had an interest in microscopy going back to his childhood, and was one of the few Modernist artists to produce art micrography, in cooperation with the biologist Ernst Boesiger and with Adolf Portmann at the Hydrobiological Institute in Lucerne. On this see John Matheson, *Hans Erni: Drawings and Public Commissions* (Frauenfeld: Edition Scheidegger im Verlag Huber, n.d. [1979]), 12; Walter Rüegg, *Hans Erni. 1 Paintings* ed. Ernst Scheidegger (Munich: Edition Erpf Bern, n.d. [1979]), 87 (for a reproduction of one of his first micrographs -- alas undated) and Boesiger's "Erni's Beziehungen zu den Naturwissenschaften," in Jean-Christophe Ammann, ed., *Zeitgenossen sehen Hans Erni* (Lucerne: Kunstkreis Luzern, 1972), 70-75. Of Erni's "humanistic" biocentrism Boesiger writes: "Von Evolutionsprinzip her verstehe ich Ern's Werk am besten: vom Interesse für Natur und Menschen, beide nicht der Natur entgegengestellt, da sie Teile der Natur sind." (p. 91) On Erni's anti-anthropomorphism, and his valorization of Nietzsche's Vitalism see also Rüegg, *Hans Erni*, 73, 75. Erni's biocentric interest in the natural sciences lasted for most of his career, even if his interest in producing biomorphic abstraction did not. After the late 30s he developed a representational muralistic style which culminated in his illustrations for an encyclopedia of science in 1959. He often expressed biocentric themes in his representational works. See, e.g., his tempera paintings *Bios* (1941) and *Man's Place*

in Nature (1959), in Rüegg, *Hans Erni*, 115, 184. The title *Bios* suggests that Erni had read Raoul Francé's two volume manifesto of biocentrism *Bios: Die Gesetze der Welt*. On Francé, see Chapter Three.

70. On Erni's selection of the works, see Paul Hilber, "Vorwort," *these antithese synthese*, 4. See also the letter which Hilber (the director of the Kunstmuseum Luzern) wrote recommending Erni to the artists of Paris in relation to organizing the exhibition, and Konrad Farner's letter to Erni of 22 January 1935, as reproduced in Ammann, ed., *Zeitgenossen sehen Hans Erni*, 19-21. For a statement of Héliion's organicism, see his article "From Reduction to Growth," *Axis* no. 2 (1935): 23. For examples of Jakovski's dialectical thinking, see, e.g. his essay in *these antithese synthese* exh. cat. (Lucerne: Kunstmuseum Luzern, 1935), 10-14; his "Inscriptions under Pictures," *Axis* no. 1 (January 1935): 14, and his text for the exhibition catalogue *H. Erni, H. Schiess, K. Seligmann, S. H. Tauter-Arp, G. Vulliamy* (Paris: Editions Abstraction-Création, 1934). Myfanwy Evans made fun of Jakovski's dialectics, writing in a review of his book *Twenty-three Engravings* (London: Orobitz & Co., 1935) that "All decisions are personified into opposing though sluggish forces, and he exists in a gently chaotic limbo." *Axis* no. 4 (1935): 28. On Jakovski's, Héliion's and Farner's roles, see Farner's cited letter to Erni of 22 January 1935. On Farner's influence on Erni, see also John Matheson, "Theoretical Introduction," *Hans Erni*, 19.

71. The artists are Arp, Braque, Calder, de Chirico, Derain, Ernst, Erni, Fernandez, Giacometti, Gonzalez, Gris, Héliion, Kandinsky, Klee, Léger, Miró, Mondrian, Nicholson, Ozenfant, Paalen, Picasso,

72. First proposed by János Brendel in his article "Der deutsche Einfluss von Scheerbart und Wilhelm Ostwald auf die ungarische Konstruktivistentheorie" (in Hubertus Gassner, ed., *Wechselwirkungen: Ungarischer Avantgarde in der Weimarer Republik* (Marburg: Jonas, 1986), 177), this dialectic in Kállai's theory of Constructivism was explicated by Monika Wucher in her "Attribute des Konstruktivismus: Die Ordnungsversuche des Ernő Kállai," and was extended to his writings on *Bioromantik* by Gábor Pataki, "Technoromantik" (both in Hubertus Gassner, Karlheinz Kopanski and Karin Stengel, eds., *Die Konstruktion der Utopie: Ästhetische Avantgarde und politische Utopie in den 20er Jahren* (Marburg and Kassel: documenta Archiv and Jonas Verlag, 1992), 190-6 and 203-07, resp.)

73. Kállai, "Zurück zum Ornament." The fuller text:
Es gibt noch Zeichen dieser ungebrochenen schöpferischen Tatkraft. In Paris ist eine internationale Vereinigung "Abstraction-Création" zustande gekommen... Die Künstler, die im Zusammenhang mit der

neuen Raumvision genannt wurden, sind darin fast alle beisammen. Ihnen zur Seite stehen noch andere, von denen besonders Arp, Foltyn und Seligmann wesentlich sind. Die Bilder dieser Drei rücken der Natur bis zur innersten Keimzelle, bis zur irrationalen Kern zuleibe. Sie beschreiben gleichsam biologische Urzeichen: phantastische, zugleich triebhafte und ideenhafte Gestalten, Physiognomien, Organismen, in denen Tier, Pflanze und Mensch wesenhaft vereint sind... Mit den irrationalen Zeichenbildern von Arp, Foltyn und Seligmann reicht die Abstraction-Création zu den Surrealisten hinüber, die sie theoretisch ablehnt. Man ist dicht bei Joan Miró und Constantin Brancusi, die ihrerseits Bindeglied wären zu Paul Klee... Ernst, G. H. Roux, E. W. Nay, Dali und Otto Coester, und zu den Bildhauern Lipschitz, Henry Moore, Ewald Mataré, Haizmann. Eine internationale Ausstellung in Zürich bewies doch, wie sehr Abstrakte und Surrealisten zusammengehören, auch wenn sie in gewissem Sinn feindlichen Brüdern gleichen.

On *Bioromantik*, see below. On Kállai and Klages, see Chapter Five.

74. See Farner's cited letter to Erni of 22 January 1935.

75. "Mathematik," *these antithese synthese*, 28.

76. See Jakovski, "Inscriptions under Pictures," especially the sentences on Brancusi, Arp and Miró, e.g.: "The unending embrace, is that not the dream of Miró's and Arp's creation?" (p. 16)

77. Ian Jeffrey, "Neo-Romanticism Against Itself: The Case of Geoffrey Grigson" in David Mellor, ed., *A Paradise Lost: The Neo-Romantic Imagination in Britain, 1935-55* exh. cat. (London: Lund Humphries and Barbican Art Gallery, 1987), 133.

78. Alfred Cort Haddon, *Evolution in Art: As Illustrated by the Life-histories of Designs* (1895) (London: Walter Scott, 1902). Published in Havelock Ellis' "Contemporary Science" series. From 1881 to 1893, though he was English, Haddon held the chair in zoology at the Royal College of Science in Dublin, Ireland. Later he moved to Cambridge, England where he contributed to the founding of the "Cambridge School" of anthropology, a school of which he was considered the "leader." Biographical details on Haddon are from George W. Stocking, Jr., *After Tylor. British Social Anthropology 1888-1951* (London: Athlone, 1996), 98-115. On Ellis and Haddon, see Stocking, 107. On Haddon and the Cambridge School see Stocking, 115-6. Given that he was originally trained as an evolutionary zoologist, it is not surprising that Haddon adapted the Darwinian method of analysis to his adopted second field

of anthropology, by attempting to trace the morphological evolution of categories of material culture. On this, see Stocking, 105-6.

79. Herbert Christian Merillat points out this origin of "biomorph" in *Modern Sculpture: New and Old Masters* (New York: Dodd, Mead & Co., 1974), 31. Though Merillat does not cite a source, it might have been *Webster's New Collegiate Dictionary*, Ninth Edition, (Springfield, MA.: Miriam Webster, 1983), which, though it does not give a bibliographical reference, cites 1895 as the year of the earliest usage of "biomorph," the year *Evolution in Art* appeared.

80. Haddon, *Evolution in Art*, 126-27. The quotation in parentheses is from a passage on page 127.

81. *Ibid.*, 127. Haddon was a protégé of the English Darwinian zoologist Thomas Huxley, and through Huxley as well as his own zoological studies, he would have known the work of Ernst Haeckel very well. He was also a student and friend of the Scottish organicist city theorist Patrick Geddes. See Stocking, *After Tylor*, 99, 107. On Geddes and Hannes Meyer, see Chapter 5.

82. *Ibid.*, 128.

83. Grigson was one of the major promoters, theorists, practitioners and critics of British Neo-Romanticism, both literary and artistic. A Vitalist himself, he promoted the Vitalist artists Wyndham Lewis and Henry Moore among his contemporaries. He also published extensively on British Romantic art and literature (Blake, Coleridge, Palmer, Constable, Turner) and on nature (English wildflowers). See Grigson, *Recollections*, and Jeffrey, "Neo-Romanticism Against Itself." On Grigson as a "disciple" of Lewis, see King, *The Last Modern*, 123.

84. Mark Roskill, *The Interpretation of Pictures* (Amherst: The University of Massachusetts Press, 1989), 83. First published in 1915, Wölfflin's *Principles of Art History* appeared in English by 1932. See "Preface to the Sixth Edition," *Principles of Art History* (New York: Dover, n.d. [c. 1950]), vii, footnote 1.

85. Alfred H. Barr, Jr., *Cubism and Abstract Art* (New York: MOMA, 1936), jacket. For an intelligent critique of the geometric/organic bifurcation of pattern, i.e. art-making (e.g. in the work of Worringer and Hauser), see Burnham, *Beyond Modern Sculpture*, 69. Concerning Wölfflin's reliance on formal qualities and binary oppositions, see Kultermann, *The History of Art History*, 178.

86. Curiously, Sandler interprets this in the opposite way. See "Introduction," 26.
87. Barr, *Cubism and Abstract Art*, 19.
88. On this resistance, see Sandler, "Introduction," 12-13. Sandler's attempt to recast Barr as an anti-formalist is exaggerated, and reflects more Sandler's eagerness to defend Barr from "accusation" of formalism (a byproduct of the anti-formalist 80s when Barr was, like Greenberg, scapegoated), rather than of Barr's actual thinking. Though a formalist by orientation, Barr did not hold a Greenbergian reductivist view of this creed, but incorporated his formalism into a wider view of critical and historical value.
89. For a reading of Worringer as opposed to Vitalism, see Michael W. Jennings, "Against Expressionism: Materialism and Social Theory in Worringer's *Abstraction and Empathy*," in Donahue, ed., *Invisible Cathedrals*, 99. I do not think this to be the only possible reading of Worringer's attitudes.
90. Barr, *Cubism and Abstract Art*, 200. On this, see Sandler, "Introduction," 26.
91. James Johnson Sweeney, *Joan Miró*, exh. cat. (New York: MOMA, 1941); Alfred Barr, *Paul Klee*, exh. cat. (New York: MOMA, 1941).
92. Sandler, "Introduction," 28. See Dorothy C. Miller, *Fourteen Americans*, exh. cat. (New York: MOMA, 1946), including biomorphic Modernist works by Isamu Noguchi, Arshile Gorky, Mark Tobey and Theodore Roszak.
93. Parker Tyler, "The Limit of the Probable in Modern Painting," review of Sidney Janis, ed., *Abstract and Surrealist Art in America* (New York: Reynal and Hitchcock, 1945), *View*, Series 5, no. 1 (March 1945): 41. See also Tyler's "Nature and Madness Among the Younger Painters," *View*, Series 5, no. 2 (May 1945): 30-31.
94. "In renouncing or drastically distorting natural shapes the abstract painter makes a judgement of the external world. He says that such and such aspects of experience are alien to art and to the higher realities of form; he disqualifies them for art... [M]odern... painters... seek freedom outside of nature and society and consciously negate the formal aspects of perception... that enter into the practical relations of man in nature." Schapiro, "Nature of Abstract Art" (1937) in Schapiro, *Modern Art: 19th and 20th Centuries. Selected Papers* (New York: George Braziller, 1982), 198.
95. Schapiro, "Nature of Abstract Art," 211.

96. See *The Shorter Oxford Dictionary* (1933) (Oxford: Clarendon Press, 1959), 1384. On the term "organic," see Richard Shustermann, "Organic Unity: Analysis and Deconstruction," in Reed Way Dasenbrock, ed., *Redrawing the Lines: Analytic Philosophy, Deconstruction, and Literary Theory* (Minneapolis: University of Minnesota Press, 1989), 92ff.
97. Carline van Eck suspects that "organisch" was first used in relation to architecture by Alois Hirt (1759-1839). Carline van Eck, *Organicism in Nineteenth-Century Architecture: An Inquiry Into its Theoretical and Philosophical Background* (Amsterdam: Architectura and Natura Press, 1994), 144.
98. See Jan Christian Smuts, *Holism and Evolution* (London: Routledge and Kegan Paul, 1926). The ditty was first coined by the Austrian philosopher Christian von Ehrenfels in 1890. On this, see Anne Harrington, *Reenchanted Science: Holism in German Culture* (Princeton: Princeton University Press, 1996), 27-8.
99. Donna Haraway, *Crystals, Fabrics and Fields: Metaphors of Organicism in Twentieth-Century Developmental Biology* (New Haven: Yale University Press, 1976), 193. See Haraway's discussion of the relations between organicism and vitalism on pp. 22-24, 33-34, in which she argues that there are significant differences between organicism and vitalism: "...although both vitalists and organicists share a devotion to the idea of wholeness and a rejection of mechanistic physics and chemistry as adequate to the solution of biological problems, they diverge on a very critical issue. Organicists declare that it will be possible to state positive, unambiguous, empirically grounded laws for all aspects of the behavior of organisms. Form and organization are not mysteries, but challenges." (p. 197) I discuss this issue in Chapter Two.
100. *Concise Oxford English Dictionary*. (Oxford: Clarendon Press, 1964) and *Webster's Ninth New Collegiate Dictionary* (Springfield Mass.: Miriam Webster, 1983). Note that "biomorph" does not appear in the 1959 edition of the *Shorter Oxford English Dictionary* (1933-59), and so it seems to have been added only in the early 60s.
101. Merillat, *Modern Sculpture*, 22.
102. Robert Goldwater, *What is Modern Sculpture?* exh. cat. (New York: MOMA, 1969), 56. It is characteristic that the term "biomorphism" is invoked more often for sculpture than painting, but Goldwater's text and others similar to it can be applied just as well to painting, the graphic arts and indeed photography.

103. Philip Ritterbush, *The Art of Organic Forms* (Washington D.C.: Smithsonian Institution Press, 1968), 27.
104. Georg Schmidt in Schmidt and Georg Schenk, *Form in Art and Nature* (Basel: Basilius-Press, 1960), 30.
105. Ernst Haeckel, *Kunstformen der Natur* (Leipzig and Vienna: Bibliographisches Institut, 1899-1904).
106. Ernst Haeckel, *Monism as Connecting Religion and Science. The Confession of Faith of a Man of Science* (London: Adam and Charles Black, 1984), 3.
107. Ibid.
108. See Ritterbush, *The Art of Organic Forms*, 64-66, Ernst Haeckel, *Kristallseelen: Studien über das anorganische Leben* (Leipzig: Alfred Kröner, 1917), and Niles R. Holt, "Ernst Haeckel's Monistic Religion," *Journal of the History of Ideas* 32, no. 2 (April-June 1971), 279-80. See also Chapter Two.
109. Holt, "Ernst Haeckel's Monistic Religion," 279.
110. Haraway, *Crystals, Fabrics, and Fields*, 11.
111. The virus, geometric, indeed "crystalline" in form, and controversial as to whether it is "alive" or inanimate, would have suited Haeckel's purposes even better. On the "crystalline" in Modernism, see Regine Prange, *Das Kristalline als Kunstsymbol: Bruno Taut und Paul Klee. Zur reflexion des Abstrakten in Kunst und Kunsttheorie der Moderne* (Hildesheim: Georg Olms Verlag, 1991). We can see how complicated and confused things become with Worringer's identification of the crystalline with the "abstract," and the problematic nature of organic abstraction in his schema.
112. Lisa Phillips, Introduction to *Vital Signs* exh. cat. (New York: Whitney Museum of American Art, 1988), 7-8.
113. Sherrye Cohn, *Arthur Dove: Nature into Symbol* (Ann Arbor: UMI Research Press, 1985), 25.
114. See Andrew Causey, "Herbert Read and the North European Tradition 1921-33," in Read and Thistlewood eds., *Herbert Read*, 40 and King, *The Last Modern*, 117-18.
115. J. M. Richards, Review of Alfred Barr, *Cubism and Abstract Art*, *Axis* no. 7 (1937): 31.
116. His work was nevertheless well-known in New York. For example, he was quoted prominently by Elodie Courter Osborne in the introductory text to *Teaching Portfolio Number Two*:

Texture and Pattern (New York: Museum of Modern Art, n.d. [1948-49]), a publication which encouraged the naturamorphic analogy in the applied arts by including leaves with natural patterns printed on them, much the way Haeckel had encouraged such usage in his turn of the century *Kunstformen der Natur*.

117. See Lesley Jackson, *The New Look: Design in the Fifties* (London: Thames and Hudson, 1991), 36 and Eliot F. Noyes, *Organic Design in Home Furnishings* (New York: MOMA, 1941). The term "organic" in the context of American design was of course popularized by Frank Lloyd Wright. See, "organic design" (sic), in Guy Julier, *Encyclopaedia of 20th Century Design and Designers* (London: Thames and Hudson, 1993), 149.

118. Robert Goldwater establishes "Abstract Organic Form" and "Organically Stylized Form" as sections of his exhibition on the influence of Modernist art on contemporary design in his exhibition catalogue *Modern Art in Your Life* (New York: MOMA, 1949), 26-33. (See also the schematic representation of the layout of the exhibition on page 44 in the 1953 edition of the catalogue.)

119. Goldwater, *What is Modern Sculpture?*, 56.

120. Andrew Carnduff Ritchie, *Abstract Painting and Sculpture in America* (New York: MOMA, 1951), 66-68, 92-101, 125-47. In addition, Ritchie includes the work of biomorphic Modernists such as Calder and O'Keeffe in yet other categories, and he incorporates a discussion of Brancusi's work, and of its formal affinities with that of Arp and Moore, in a section he entitles "The Object Purified: Brancusi and Organic Abstraction." (pp. 21-25) in his *Sculpture of the Twentieth Century* (New York: MOMA, 1952).

121. Tyler, "Nature and Madness," 30.

122. William Rubin, *Dada and Surrealist Art* (New York: Abrams, 1968), 125. See also his discussion of Arp's early formal language, pp. 76ff.

123. Metzger, "Biomorphism in American Art." For example, while Metzger writes, "The abstract Surrealists used biomorphism as a tool to uncover the primordial biological roots that link mankind more directly to irrational nature than to a technological civilization" (p. 93), he does not expand on this idea.

124. See Christopher Green's discussion of Miró, Masson and Ernst in *Cubism and Its Enemies* (New Haven: Yale University Press, 1987). In it, Miró appears as the most faithfully automatic of the group (pp. 267-71).

125. Renato Poggioli, *The Theory of the Avant-Garde*, trans. Gerald Fitzgerald (Cambridge Mass.: Harvard University Press, 1968), 49-50.
126. See Read, "Surrealism and the Romantic Principle" (1936), in: *The Philosophy of Modern Art* (London: Faber and Faber, 1952), 105-41. For a discussion of Read's awareness of the Romantic background of Surrealism, see Poggioli, *The Theory of the Avant-Garde*, 47-48.
127. Dorner, *The Way Beyond Art*, 97-8. For an in-depth discussion of the "hieroglyph" in the Romantic and Modernist discourses, see Hilmar Frank, "Arabesque, Cipher, Hieroglyph: Between Unending Interpretation and Loss of Meaning," in Keith Hartley, et al., eds., *The Romantic Spirit in German Art 1790-1990* exh. cat. (Edinburgh: Royal Scottish Academy and the FruitMarket Gallery, 1994), 147-54.
128. Christa Lichtenstern, *Metamorphose in der Kunst des 19. und 20. Jahrhunderts*, 2 vols. 1: *Die Wirkungsgeschichte der Metamorphosenlehre Goethes von Philipp Otto Runge bis Joseph Beuys* (1990) and 2: *Metamorphose: Vom Mythos zum Prozessdenken* (1992) (Weinheim: VCH Acta humaniora); Elizabeth Legge, *Max Ernst: The Psychoanalytic Sources* (Ann Arbor: UMI Research Press, 1989); and "Zeuxis's Grapes, Novalis's Fossils, Freud's Flowers: Max Ernst's Natural History," *Art History* 16, no. 1 (March 1993): 147-172; Karin Orchard, *Die Erfindung der Natur: Max Ernst, Paul Klee, Wols und das surreale Universum* (Freiburg im Bressgau: Rombach Verlag, 1994). Because of his problematic relationship with Surrealism, I do not even mention Klee in this connection, whose own affinities with German Nature Romanticism are well known.
- I do not mean to imply that the Romantic heritage was never mentioned. Marcel Jean cites Breton's "First Manifesto of Surrealism" as constituting a bridge between the psychologies of Freud and Romanticism. Indeed Surrealism was seen in France during the 30s as a manifestation of Germanic Romanticism. Rather, it was specifically the heritage of *Naturromantik* which was downplayed, particularly in the post-war formalist critical literature. See Marcel Jean and Árpád Mezei, *The History of Surrealist Painting* Translated by Simon Watson Taylor. (New York: Grove Press, 1960), 118. Joan Miró is a special case: though he was clearly fascinated by nature, this fascination was not born and nourished within a context of *Naturromantik*. Thanks to Elizabeth Legge for tips on this topic.
129. I am thinking here of Klee and Moore, even Arp and Miró. See Lawrence Alloway, "The Biomorphic Forties," *Artforum* 4, no. 1 (September 1965): 18.

130. On Benjamin's review see Chapter Five. For a biography of Kállai, see Éva Forgács, "Bevezető" [Introduction] to Forgács, ed., Kállai, *Művészet veszélyes csillagzat alatt: Válogatott cikkek, tanulmányok* [Art under dangerous constellations: Selected articles, studies] (Budapest: Corvina, 1981), 9ff.

131. Kállai, "Kunst und Wirklichkeit," *Sozialistische Monatshefte* 37 no. 10 (October 1931): 998.

132. See Stafford, *Body Criticism*.

133. Ernst Kállai, "Bioromantik," *Forum* (1932): 271-74. The article reappeared in a slightly altered version without the illustrations in the Berlin journal *Sozialistische Monatshefte*, in January of 1933 (vol. 75, no. 1: 46-50), just before it was shut down by the Nazis. *Forum* was published in Slovak, German and Hungarian, the three languages of the Slovak capital Bratislava (also: Pozsony or Pressburg), located near Vienna. He had been developing these ideas in articles such as "Das Bauen und die Kunst," *Der Kunstnarr* 1 (April 1929): 16; "Vision und Formgesetz," *Blätter der Galerie Ferdinand Möller* no. 8 (September 1930): 2-4; "Rythmus in Bildern," *Die Weltbühne* 26 no. 41 (7 October 1930): 55; "Kunst und Wirklichkeit," "Kunst und Technik," *Sozialistische Monatshefte* 37 no. 11 (November 1931): 1099-100; "Zurück zum Ornament," *Sozialistische Monatshefte* 38 no. 7 (July 1932): 613; "Zeichen und Bilder," *Die Weltbühne* no. 38 (June 1932): 444-5 and in a different version in *Forum* (1933): 122-3 and 150-51. On the development of Kállai's conception of "Bioromantik," see Chapter Five.

134. Kállai, "Bioromantik" *Forum*: 271.

135. Kállai, "Zeichen und Bilder" (1933): 123.

136. Kállai, "Bioromantik," *Sozialistische Monatshefte*: 48.

137. Kállai, "Bioromantik," *Forum*: 271-2. On Kállai, Prinzhorn, Jung and Dacqué, see Chapter Five.

138. Kállai, "Bioromantik," *Sozialistische Monatshefte*: 48. On this "new biology," or "Neue Naturwissenschaft," see Chapter Two.

139. Kállai, "Bioromantik" *Forum*: 272.

140. The Ukrainian Alexander Archipenko, the Alsatian Hans/Jean Arp, the Romanian Constantin Brancusi, the Czech František Foltyn, the Lithuanian Jew Lipschitz, the Catalan Joan Miró, the English Henry Moore, the Swiss Kurt Seligmann, the French G. H. Roux and the Germans Fraddo Bartoluzzi, Otto Coester, Max Ernst, Richard Haizmann, Paul Klee, Fritz Kuhr,

Franz Marc, Ewald Mataré, Ernst-Wilhelm Nay, Richard Oelze and Fritz Winter.

141. Willy Baumeister, Auguste Herbin, Heinrich Hoerle, Wassily Kandinsky, Frantisek Kupka, Pablo Picasso, Kurt Schwitters, Yves Tanguy, Lajos Vajda, and the Budapest "Abstract Group" artists Tamás Lossonczy, Tihamér Gyarmathy, Gyula Marosán, Béla Fekete, Magda Zemplényi, József Jakovics and János Martinszky. See Ernő Kállai, *A természet rejtett arca* [The hidden face of nature] (Budapest: Misztótfalusi, 1947). In this publication, Kállai reproduced "crystalline" examples of geometric abstraction by Klee and Winter.

142. This has been the consensus of my interviews with members of Kállai's Budapest circle, and is still the way the term is understood and employed among the *cognoscenti* in Hungary.

143. On this *topos*, see the Introduction and Chapters Three, Four and Five. I will write a full history of it elsewhere. As Forgács writes, "with the designation of *Bioromantik*, Kállai delimited a tendency within Surrealism, the highlighting of which is justified, and which without this highlighting would remain unnamed." Forgács, "Bevezető," 26.

144. Kállai, "Bioromantic" Forum: 273. As Forgács writes, "with the designation of *Bioromantik*, Kállai delimited a tendency within Surrealism, the highlighting of which is justified, and which without this highlighting would remain unnamed."

145. On O'Doherty, see below.

146. On Siegfried Giedion's organicist/holist (i.e. biocentric) views, see Arthur P. Molella, "The First Generation: Usher, Mumford, and Giedion," in Stephen H. Cutcliffe and Robert C. Post, eds., *In Context: History and the History of Technology. Essays in Honor of Melvin Kranzberg*. (Bethlehem: Lehigh University Press and London/Toronto: Associated University Presses, 1989), 97-100. See also Giedion's own statement of his holism in his *Mechanization Takes Command: A Contribution to Anonymous History* (1948) (New York: Norton, 1969), 717-23.

147. "At present it is difficult for anyone to imagine the state of three-dimensional art just prior to the Second World War. It was certainly not what books published in the past ten years would have us believe. When Carola Giedion-Welcker's *Contemporary Sculpture* first appeared in 1937, her thesis was definitely a minority opinion. However the text and photographs for this book were an incredibly valid and accurate estimation of significant twentieth-century sculpture as we see it today." Burnham, *Beyond Modern Sculpture*, 168-69.

148. See Carola Giedion-Welcker, *Schriften 1926-1971. Stationen zu einem Zeitbild* ed., Reinhold Hobl (Schauberg: DuMont, 1973).
149. Carola Giedion-Welcker, "New Roads in Modern Sculpture" trans. Eugene Jolas *Transition* 23 (1934-35): 200-201. The original German, "Neue Wege der heutigen Plastik" (1934) is published in Giedion-Welcker, *Schriften*, 386.
150. Giedion-Welcker, "New Roads in Modern Sculpture," 198.
151. Carola Giedion-Welcker, *Modern Plastic Art* Translated by P. Morton Shand (Zürich: Girsberger, 1937).
152. Carola Giedion-Welcker, *Contemporary Sculpture: An Evolution in Volume and Space* (New York: Wittenborn, 1955).
153. "Organische Elementarismus" is a term she uses to describe Arp and Brancusi in her 1934 article "Neue Wege der heutigen Plastik."
154. In the first quotation (p. xxvii) she is writing of Brancusi. The second quotation is about "Organic Elementarism" (i.e. biomorphic Modernism) in general, about Giacometti, Lipschitz, Moore and Hepworth. Giedion-Welcker, *Contemporary Sculpture*, xxix.
155. *Ibid.*, xxix-xxx.
156. Giedion-Welcker, *Modern Plastic Art*, 110.
157. Max Bill's attempts to help Kállai publish a book in Motherwell's "Documents of Modern Art" series in 1946 met with failure. Kállai's correspondence with Bill is in the Archives of the Art Historical Research Group of the Hungarian Academy of Sciences.
158. Dorner, *The Way Beyond Art*.
159. *Ibid.*, 35.
160. Dorner likened it to the analogous "Pragmatist" philosophy of William James and John Dewey he encountered after his emigration to America in the late 1930s. Like Moholy-Nagy, it was Dewey's philosophy which Dorner felt the closest affinity to after his transfer to the United States. Indeed, Dorner dedicated *The Way Beyond Art* to Dewey. See pp. 18-19.
161. *Ibid.*, 17-18. On Moholy's gallery plans, see Veit Loers, "Moholy-Nagys 'Raum der Gegenwart' und die Utopie vom Dynamisch-Konstruktiven Lichtraum," in Loers, ed., *László Moholy-Nagy exh. cat.* (Stuttgart: Gerd Hatje, 1991), 37-51. See

endnote 1 (p. 50) for a review of the literature on this room.

162. Dorner, *The Way Beyond Art*, 89-90. For a discussion of Dorner's developmental theory of art, see Monika Flacke-Knoch, *Museumskonzeptionen in der Weimarer Republik: Die Tätigkeit Alexander Dorners im Provinzialmuseum Hannover* (Marburg: Jonas, 1985), 39-47.

163. *Ibid.*, 90.

164. *Ibid.*, 96. The exact relations between Dorner's term "Modern Realists" and biomorphic Modernism is a subject for further reasearch.

165. See Kállai, "Kunst und Wirklichkeit," etc.

166. In 1913 Strzygowski outlined the program of research for the Vienna Institute in a manner surprisingly close to what we would now term "cultural studies": "1. Starting with the art of Europe, the institute should study the art of Asia and, in principle, that of the whole world. 2. It should study the visual arts within the context of cultural history. 3. It should find a systematic balance between historical materials, peripheral fields, and general cultural research." See Kultermann, *The History of Art History*, 163. A well-known article on this subject is Gombrich's "Reflections on a Hobby-Horse or the Roots of Artistic Form" in Lancelot Law Whyte, *Aspects of Form* (London: Percy Lund Humphries, 1951), 209-228. Thanks to Gerta Moray for pointing this article out to me.

167. Barbara Novak, *Nature and Culture: American Landscape and Painting 1825-1875* (New York: Oxford University press, 1980), vii.

168. Kubler, *The Shape of Time*, vii.

169. Jean Molino, Introduction (1986) to Henri Focillon, *The Life of Forms in Art* (1934). Translated by Charles Beecher Hogan and George Kubler (1948). (New York: Zone Books, 1992), 24.

170. For a high Modernist attempt to explore the possibility of a visual syntax, see Kepes, *Language of Vision*. As a reformist Modernist, Kepes had high expectations of the promotion of an awareness of such a language: "The language of vision, optical communication, is one of the strongest potential means both to reunite man and his knowledge and to reform man into an integrated being... Visual language must be readjusted, however, to meet its historical challenge of educating man to a contemporary standard, and of helping him to think in terms of form." (p. 13) Critics such as Jonathan Crary and Barbara Stafford might be expected to at least

acknowledge this tradition of visuality within Modernism that they are so keen on promoting. Neither Crary in *Techniques of the Observer* nor Stafford in *Body Criticism* list Kepes' books in their bibliographies.

171. Holly, *Panofsky*, 13 and Kultermann, *The History of Art History*, 225, 238.

172. Kubler, *The Shape of Time*, 126.

173. Focillon, *The Life of Forms in Art*, 31-32.

174. A fragment from 1885-86 quoted in Mark C. Taylor, ed., *Deconstruction in Context: Literature and Philosophy* (Chicago: University of Chicago Press, 1986), 195.

175. Jon R. Snyder, Introduction to Gianni Vattimo, *The End of Modernity: Nihilism and Hermeneutics in Postmodern Culture* (Baltimore: The Johns Hopkins University Press, 1988), xxi.

176. Roskill, *The Interpretation of Pictures*, 89.

177. Kubler, *The Shapes of Time*, 36.

178. For a discussion/critique of "deconstruction" which I sympathize with, see George Steiner, *Real Presences: Is there anything in what we say?* (London: Faber and Faber, 1989), 128-34. Thanks to Gerold Plotnick for pointing this book out to me, for discussing the content of this paragraph and for suggesting wording changes.

179. See Burnham, *Beyond Modern Sculpture*, 69.

180. I accept the biologically- and psychologically-based idea that there is no unified "subject." Thus, it is a complicated and difficult matter to impute intentionality. This does not mean that there is no intentionality. Nor does it imply that the range of possible intentions is limitless, rendering their divination impossible. It implies, rather, that intentions may be multiple and even contradictory within one "subject." The writing of history, like people themselves, is complicated.

181. Hauser, *Mannerism*, 19.

182. Poggioli, *The Theory of the Avant-Garde* trans. Gerald Fitzgerald (Cambridge Ma.: Harvard University Press, 1968), 19.

183. Burnham, *Beyond Modern Sculpture*, 80-81.

184. Poggioli, *The Theory of the Avant-Garde*, 19.

185. See, e.g., Hayden White, *The Content of the Form: Narrative Discourse and Historical Representation* (Baltimore: Johns Hopkins University Press, 1987). Thanks to Mitchel Frank for suggesting this book to me.

186. White, *The Content of the Form*, 54.

187. See, e.g., Paul Delany and George P. Landow, eds., *Hypermedia and Literary Studies* (Cambridge MA: MIT Press, 1994), especially Jay David Bolter, "Topographic Writing: Hypertext and the Electronic Writing Space," 105ff.

188. On the historical construction of styles, see Chapter One of Hauser's *Mannerism*.

189. Kubler, *The Shape of Time*.

190. *Ibid.*, 117.

191. On these approaches, see, e.g., John Sturrock, *Structuralism* (London: Paladin/Grafton Books, 1986), 5.

192. David Mellor, Editor's Preface, *A Paradise Lost: The Neo-Romantic Imagination in Britain, 1935-55* exh. cat. (London: Barbican Art Gallery, 1987), 9. So deeply ingrained is the binary opposition of Formalism = abstraction vs. Neo-Romanticism = figuration, that this catalogue does not include the "non-figurative" work of those artists such as Moore, Hepworth and Nash who had begun the call for a return to nature in British art.

193. While Metzger focused on American art in his dissertation, he also treated European biomorphic Modernism as a source for its American equivalent. Metzger, "Biomorphism in American Painting," Chapter One. For a discussion of Metzger's dissertation, see below. This surprising lack of interest is mirrored in the field of architectural history: According to Caroline van Eck, the books of Zevi and Collins, the only historical works on organicism in architecture, were polemical Modernist tracts. The one exception is Philip Steadman, whose writing is more diachronically than synchronically focused, not so much on history as a on system. On Steadman see Chapter Three. Van Eck, *Organicism*, 35-36.

194. Greenberg effectively avoided discussion of biomorphic Modernist artists or, when he did deal with them, strictly limited his treatment to formal issues. See, for example, his discourse on Brancusi in his essay "The New Sculpture" (1948\1958) in: Clement Greenberg, *Art and Culture. Critical Essays* (Boston: Beacon Press, 1961), 141-42. As he wrote in "Towards a Newer Laocoon" (1940), "The purely plastic or abstract qualities of the work of art are the only ones that count."

In: Charles Harrison and Paul Wood, eds., *Art in Theory: 1900-1990* (Oxford: Blackwell, 1992), 558.

195. This point was made by Leo Steinberg in his 1953 article "The Eye is a Part of the Mind," *Partisan Review* 20, no. 2 (1953).

196. John Baur, Introduction, *Nature in Abstraction: The Relations of Abstract Painting and Sculpture to Nature in Twentieth Century American Art* (New York: Whitney Museum of American Art and Macmillan, 1958), 6.

197. Mark C. Taylor, *Disfiguring: Art, Architecture, Religion* (Chicago and London: The University of Chicago Press, 1992), 4.

198. See, e.g., Metzger's descriptions of Dove's paintings in Chapter Two of "Biomorphism in American Art."

199. Christoph Vitali, "Einführung in die Ausstellung," *Elan Vital oder das Auge des Eros: Kandinsky, Klee, Arp, Miró, Calder* exh. cat. (Munich: Haus der Kunst, 1994), 11.

200. Lesley Jackson, *The New Look: Design in the Fifties* (Manchester: Manchester City Art Galleries, 1991), 12 and 101.

201. May-June 1964, quoted in Burnham, *Beyond Modern Sculpture*, 171.

202. Burnham, *Beyond Modern Sculpture*, 171.

203. *Ibid.*, 79-80.

204. For a critique of Burnham's *Beyond Modern Sculpture* as "mechanist," see Rosalind Krauss, *Passages in Modern Sculpture* (Cambridge, Mass.: The MIT Press, 1977), 212.

205. This change in valuation was part of a larger "paradigm shift" in the life sciences which occurred, according to Donna Haraway "between the First World War and the present," during which time "biology has been transformed from a science centred on the organism, understood in functionalist terms, to a science studying automated technological devices, understood in terms of cybernetic systems. Organic form ... gave way to systems theory..." *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), 44-5, 58-9. This shift is exactly mirrored in Burnham's text.

206. Ernest Nagel, "Mechanistic Explanation and Organismic Biology," *Philosophy and Phenomenological Research* 2 (1951): 327; quoted in Frederick Burwick and Paul Douglass, Introduction to the anthology they edited, *The Crisis in Modernism:*

Bergson and the Vitalist Controversy (Cambridge: Cambridge University Press, 1992), 7. Burwick and Douglass note, however, that "Nagel himself was not really burying the subject. In fact, by advocating 'organismic biology,' he had joined the proponents of a renovated vitalism" (p. 7).

207. Burnham, *Beyond Modern Sculpture*, 63. For a discussion of the discrediting of Neo-Vitalism in the biological sciences within the discourse of art history, see Burnham, pp. 56-65.

208. See the passage quoted from the Graduate Group in Biophysics at the University of California, San Francisco of 1991 in George Rousseau, "Traditions of Enlightenment Vitalism" in Burwick and Douglass, eds., *The Crisis in Modernism*, 15-16. Vitalism or its variants survive, of course, even among scientists. The ultimately Vitalist nature of organicism and systems thinking suggested by some is one means by which Vitalist views may persist today. C.f. also "New Paradigm" thinking and "Quantum Mysticism." Consult, e.g., Dirk Dunbar, *The Balance of Nature's Polarities in New-Paradigm Theory* (New York: Peter Lang, 1994) and Patrick Grim, ed., *Philosophy of Science and the Occult*. Second edition. (Albany: State University of New York Press, 1990), Section IV, "Quantum Mysticism."

209. Anna Bramwell, *Ecology in the 20th Century: A History* (New Haven: Yale University Press, 1989). I discuss Bramwell in Chapter Two.

In the summer of 1992, during discussions with Hubertus Gassner in which I sketched out for him the approach to the subject I had been developing over the past year and a half, Gassner tried to dissuade me from linking biomorphic Modernism with biocentrism, warning me that biocentrism was dangerous territory to enter because of its Nazi associations. This warning was repeated by other German colleagues I consulted on the matter, so I endeavored to inform myself as thoroughly as possible on the subject. As is evident from Gassner's own treatment of the subject not three years later in the exhibition *Elan Vital* (an exhibition displayed in what was originally a showcase of Nazi art, no less), this does not constitute a reason to avoid the historical treatment of the subject.

There is a fundamental logical error in treating biocentrism, neo-Romanticism, Vitalism, etc. as "Nazi." It resides in the assumption that because the National Socialists appropriated a belief, that belief or its source was itself inherently Nazi. Following this line of reasoning, everything from homosexual rights, animal rights, environmentalism, organic farming and vegetarianism (all espoused by Hitler and his associates Rohm, Hess, Darré and others at one point or another), to the ideals of full employment, universal health care and a comprehensive network of freeways, would be suspect in the same way that occult "Aryan" supremacy, genocidal racism, murderous homophobia, forced mass eugenics, forced euthanasia

and imperialistic, militaristic *Lebensraum* doctrine are.

210. In this respect, biomorphic Modernism has suffered a fate parallel with "spiritual" abstraction, as summarized by Maurice Tuchman in his "Hidden Meanings in Abstract Art," the introduction to his and Judi Freeman's exhibition catalogue *The Spiritual in Art: Abstract Painting 1890-1985* (New York: Abbeville Press and Los Angeles County Museum of Art, 1985), 18. For a recent example of this repression, see Charles Harrison's "Abstraction," in Harrison, Francis Frascina and Gill Perry, *Primitivism, Cubism, Abstraction: The Early Twentieth Century* (New Haven and London: Yale University Press, 1993).

211. See, e.g., Patrick Werkner, *Austrian Expressionism: The Formative Years*. Translated by Nicholas T. Parsons. (Palo Alto, CA: SPSS, 1993), 251-52. I discuss how literary historians have demonstrated the central role played by biocentric ideologies such as Neo-Vitalism and Monism on Modernist culture below.

212. C.f. Charles Harrison and Paul Wood's anthology *Art in Theory*, which in 1189 pages, eight sections, twenty-five subsections and 309 textual selections, could not find the space for a single text which addresses the nature problematic.

213. Stephen Mansbach, "Attitudes Towards Nature in Some Early Twentieth Century Art," *The Structurist* no. 23/24 (1983-84), 87. Mansbach is of course correct with respect to many Utopian Modernists. It is a totalizing reading of this view that I am pointing out as being incorrect.

214. Barbara C. Matilsky, "Environmental Art: New Approaches to Nature," in Matilsky, ed., *Fragile Ecologies: Contemporary Artists' Interpretations and Solutions*, exh. cat. (New York: Rizzoli, 1992), 38.

215. People seem to have forgotten that as prominent a critic as James Thrall Soby saw the art of his time, both the painting he termed "Neo-Romantic" and Surrealism, as an "entirely romantic movement." Soby, *After Picasso* (New York: Dodd, Mead & Co., 1935), 6.

216. While George Heard Hamilton is remarkable for discussing concerns with nature and even Vitalism when individually treating artists such as Brancusi, Arp, Masson and Miró, he does not recognize biomorphic Modernism as a category in *Painting in Europe: 1880-1940* (Harmondsworth: Penguin, 1967). In *Origins of Modern Sculpture: Pioneers and Premises* (New York: Braziller, 1974), Albert E. Elsen mentions Vitalism and Bergson in connection with Brancusi, but does not discuss biomorphism as a style. Sam Hunter and John Jacobus, in their widely used survey, base their discussion of biomorphic abs-

traction, all one sentence of it, on Barr: "The subjective Gauguin emphasized emotional content, decorative or 'synthetic' methods, arabesque lines, and flat color masses to create an art that became the basis of the free forms of 20th-century biomorphic abstraction: the art of Vasily Kandinsky and automatic Surrealism." Apart from mentions of biomorphism in connection with Americans such as Arthur Dove, Georgia O'Keeffe, and the Abstract Expressionists, that is the extent of their treatment. Hunter and Jacobus, *Modern Art: Painting, Sculpture and Architecture*. Third Edition. (New York: Prentice Hall and Harry N. Abrams, 1992), 9. In *Abstract Art* (London: Thames and Hudson, 1990), Anna Moszynska treats biomorphic Modernist art, but in almost exclusively formal terms and not as a separate category. In his 1991 survey *Art Since Mid-Century: 1945 to the Present* (Englewood Cliffs, N.J.: Prentice Hall, 1991), 95, Daniel Wheeler treats biomorphic sculpture in a section on post-war sculpture without referring to it as a style. Still, he does manage to employ the terms "biomorphic," "vitalist," and "pantheistic" in a single paragraph on Brancusi, Hepworth, Moore and the American sculptor Raoul Hague. The way he writes about it, one would think that there was a body of secondary literature to back up these terse statements. The subject of biomorphic Modernism is not broached in the relevant volumes of the London Open University series. See Briony Fer, David Batchelor and Paul Wood, *Realism, Rationalism, Surrealism: Art Between the Wars* (New Haven and London: Yale University Press and The Open University, 1993) and Harrison, Frascina and Perry, *Primitivism, Cubism, Abstraction*. "Biomorphism" is cited in Laurie Schneider Adams' *A History of Western Art* (Madison, Wisconsin: Brown and Benchmark, 1994) as the opposite to "geometric" in her discussion of formal approaches to art. Apart from brief mentions of biomorphism in connection with two or three artists, however, she does not discuss biomorphic Modernism in her survey. The terms "biomorphic" and "organic" do not appear in either the glossary or index of Marilyn Stokstad's *Art History* survey. (Upper Saddle River, N.J.: Prentice-Hall, 1996).

217. For example, while Reginald G. Haggard's *Dictionary of Art Terms* (Poole, Dorset: New Orchard Editions, 1962, p. 45) and *The Oxford Dictionary of Art* (Oxford: Oxford University Press, 1994), include entries for "biomorphic art," the *Phaidon Dictionary of Twentieth Century Art* does not. Indeed, it is not even discussed under the rubric of "abstract art." (London: Phaidon, 1973).

218. Roskill, *The Interpretation of Pictures*, 82. Robert Welsh has related that the very study of twentieth century art was rare at Princeton in the 1950s.

219. For a good resumé of this phenomenon, see Tuchman, "Hidden Meanings in Abstract Art," 17-19.

220. Sheldon Cheney, *Expressionism in Art* [1934] Revised edition. (New York: Liveright, 1948), 327.
221. Schapiro, "The Nature of Abstract Art." For an interpretation of this article in its context, see Serge Guilbaut, *How New York Stole the Idea of Modern Art: Abstract Expressionism, Freedom, and the Cold War* trans. Arthur Goldhammer (Chicago: University of Chicago Press, 1983), 24-25. On Barr and Schapiro, see Sandler, "Introduction," 23-24.
222. Schapiro, "Style."
223. Steinberg, "The Eye is Part of the Mind," *Partisan Review* 20, no. 2 (1953), 196. See also Steinberg's book of essays *Other Criteria* (New York and London: Oxford University Press, 1972).
224. Baur, Introduction, *Nature in Abstraction*, 6.
225. Dorner, *The Way Beyond 'Art'*, 94-7.
226. *Ibid.*, 153-5.
227. Werner Hofmann, "Ein Beitrag zur 'Morphologischen Kunst-theorie' der Gegenwart," *Alte und neue Kunst* 2 (1953), 63-80, and "Kunst als Wirklichkeitserfindung," in his *Zeichen und Gestalt: Die Malerei des 20. Jahrhunderts* (Frankfurt/Main: Fischer, 1957), 107ff. C.f. Abrams, *The Mirror and the Lamp*, chapter 8 "The Psychology of Literary Invention: Unconscious Genius and Organic Growth."
228. Carola Giedion-Welcker, *Paul Klee* (London: Faber and Faber, 1952); Werner Haftmann, *The Mind and Work of Paul Klee* [1954] (London: Faber and Faber, 1957), Chapter 7.
229. Carola Giedion-Welcker, "Kandinsky's Malerei als Ausdruck eines geistigen Universalismus," *Werk* 37 (April 1950): 119-23.
230. See part VIII, "Durchbrechung der visuellen Barriere," in Bihalji-Merin's *Abenteuer der modernen Kunst* (Cologne: DuMont, 1962), 91-100. On Bihalji-Merin, see his memoir "Berlin - Ankunft und Abschied," in Klaus Kändler et al., eds., *Berliner Begegnungen: Ausländische Künstler in Berlin 1918 bis 1933. Aufsätze, Bilder, Dokumente* (Berlin: Dietz, 1987), 544-58.
231. Barr-style binariness was adopted by a few continental critics, such as Alfred Neumeier, who in his *The Search for Meaning in Modern Art* writes: "Since 1910 the sculpture of shapes... has taken two main directions: one is an art of geometric forms related to Cubism, the other, a morphological art which, in analogy to nature itself, produces an endless variety of beings. It is the morphological sculpture that

begins with Brancusi." Translated by Ruth Angress (Englewood Cliffs, N.J.: Prentice Hall, 1964), 57, 59.

232. Otto Stelzer, *Die Vorgeschichte der abstrakten Kunst* (Munich: Piper, 1964).

233. Biographical information is from the liner notes for Werner Hofmann, *Gegenstimmen: Aufsätze zur Kunst des 20. Jahrhunderts* (Frankfurt/Main: Suhrkamp, 1979).

234. Hofmann, *Turning Points*, 9-10.

235. Hofmann, *Turning Points*, 229. The publication of Hofmann's book in 1969 was surely important to the critique of Greenbergian formalism in the United States, and seems to have laid some of the groundwork for the art history of the 1970s informed by the history of ideas. Robert Welsh sees this as a general rather than specific influence. (Interview, 25.1.96)

236. Werner Hofmann, *Die Plastik des 20. Jahrhunderts* (Frankfurt: Fischer Bücherei, 1958), 82.

237. Hofmann, *Turning Points*, 237-39.

238. Alloway, "The Biomorphs Forties," 18-22. Alloway's interest is not surprising given his participation in the "Independent Group" associated with the London ICA during the early 50s. This group organized the exhibition "Aspects of Form" in 1951, one of the most important manifestations of the naturamorphic analogy.

239. For a summary, see Thistlewood, *Herbert Read*, 78-9.

240. Welsh, who experienced the lack of academic attention to Modernism during his student days in the 50s, wished to apply Panofsky's iconology to his study of the early work of Piet Mondrian. Sixten Ringbom was educated at the Warburg Institute in London, and was engaged in a parallel project with respect to Kandinsky. See L. D. Ettliger, *Kandinsky's 'At Rest'* (London: Oxford University Press, 1961); Ringbom, "'Art in the Epoch of the Great Spiritual': Occult Elements in the Early Theory of Abstract Painting," *Journal of the Warburg and Courtauld Institutes* 29 (1966): 386-418. Mention should also be made of Kenneth Lindsay and Peter Selz, who opened up American art historical research on German Expressionism and who employed *geistesgeschichtlich* approaches early on: See, e.g. Lindsay, "An Examination of the Fundamental Theories of Wassily Kandinsky" (Ph.D. dissertation, University of Wisconsin, Madison, 1951) and Selz, "The Aesthetic Theories of Wassily Kandinsky and their Relationship to the Origin of Non-Objective Painting," *Art Bulletin* 39 (June 1957): 127-36. An instructive literature review in this connection is provided by

Rose-Carol Washton-Long in her Preface to *Kandinsky: The Development of an Abstract Style* (Oxford: Clarendon Press, 1980). See also Tuchmann, "Hidden Meanings in Abstract Art, 17-19.

241. It is difficult to reconcile the almost contemporaneous production of *Space and Dream* and *What is Modern Sculpture?*. One can only surmise that the latter was meant for a wide audience, and was therefore rendered with a simple and unproblematical approach, which in 1969, at the Museum of Modern Art, meant a formalist one. In *Space and Dream*, meanwhile, as a book published in conjunction with an exhibition at the private M. Knoedler Gallery of New York based on a theme first explored by curators Gert van Osten and Horst Keller in an exhibition at the public Wallraf-Richartz-Museum in Cologne, Goldwater was free to explore issues raised by a theme not originally his own.

242. Robert Goldwater, *Space and Dream* (New York: Walker and Co., 1967), 7-8.

243. Rosenblum, *Modern Painting and the Northern Romantic Tradition*, 7-8. His article: Rosenblum, "The Abstract Sublime," *Artnews* 59 (February 1961): 38ff. Klaus Lankheit, "Die Frühromantik und die Grundlagen der 'gegenstandlosen' Malerei," *Neue Heidelberger Jahrbücher* (1951): 55-90. Rosenblum refers to it in his *Modern Painting and the Northern Romantic Tradition: Friedrich to Rothko* (New York: Harper and Rowe, 1975),

244. See Robert Rosenblum, *Modern Painting and the Northern Romantic Tradition*, chapter 6. E.g.: "[In a work by Klee] the fluid, irregular web of lines conveys the image of a vital organism that is withering and flaking before our eyes. It is a visual metaphor that realizes Klee's wish to make a cosmos of forms which is so similar to the Creation that only the slightest breath is needed to transform religious feeling, religion into fact, and it is a visual metaphor that also translates Friedrich and Runge's scrutiny of the palpitant God-given life of trees and flowers into the more overtly symbolic language of twentieth-century organic abstraction." (p. 152)

245. August Wiedmann, *Romantic Roots in Modern Art. Romanticism and Expressionism: A Study in Comparative Aesthetics* (Old Working, Surrey: The Gresham Press, 1979). For information on the years during which the book was written, see p. xiii. More recent presentations of this view include Mark C. Taylor's deconstructionist *Disfiguring* and Keith Hartley's anthological exhibition catalogue *The Romantic Spirit in German Art 1790-1990* (Edinburgh: Royal Scottish Academy, 1994).

246. Wiedmann, "The Organic Principle in Expressionism and Modern Art," Chapter Eight, in *Romantic Roots in Modern Art*.
247. Taylor, *Disfiguring*, 52.
248. Ibid., 291.
249. Burnham, *Beyond Modern Sculpture*, ix.
250. Philip C. Ritterbush, *The Art of Organic Forms* (Washington D.C.: Smithsonian Institution Press, 1968), the bibliography and pp. 84-85.
251. György Kepes, ed., *The New Landscape in Art and Science* (Chicago: Paul Theobald & Col, 1956); Lancelot Law Whyte, ed., *Aspects of Form* Preface by Herbert Read. (London: Percy Lund Humphries & Co., and ICA, 1951).
252. Ritterbush, *The Art of Organic Forms*, 25.
253. Ibid.
254. Haraway, *Crystals, Fabrics and Fields*, 40, 42.
255. Ritterbush included Kandinsky's *Capricious Forms* of 1937, a paradigmatic painting in this biomorphic series, in his exhibition (p. 101). Note than Hans Konrad Roethel also pointed out specific sources in scientific images for a Kandinsky works in his *Kandinsky* (Munich: Prestel, 1982), 160ff.
256. René Huyghe, *Formes et Forces*, 7-8. On Ritterbush, see also 129. See especially the section "L'art moderne découvre la microréalité," 328-36.
257. Ibid., 336.
258. Burnham, *Beyond Modern Sculpture*, 9.
259. Ibid., 94.
260. Ibid., 81.
261. Ibid., 16.
262. Ibid., 71.
263. Ibid., ix.
264. Ibid., viii.
265. Ibid., ix.

266. Ibid., 8.

267. Neither Kállai's publications nor *Kunst und Naturform* seem to have been available to him. *The Art of Organic Forms* appeared around the same time as *Beyond Modern Sculpture*. See also Krauss' incisive (and implicitly admiring) critique in *Passages in Modern Sculpture*, 209-12.

268. See for example his critique of Ritchie's terminology on page 84, and his discussion of Arthur Dove's art in terms of Kandinsky's style. Metzger, "Biomorphism in American Painting," Chapter Two, esp. p. 87.

269. Ringbom, *The Sounding Cosmos: A Study in the Spiritualism of Kandinsky and the Genesis of Abstract Painting*, Acta Academia Aboensis, ser. A. 38 (Abo, Finland: Abo Akademi, 1970); Robert Welsh, "Mondrian and Theosophy," in *Piet Mondrian, 1872-1944, A Centennial Exhibition* exh. cat. (New York: Guggenheim Museum, 1971), 35-52; Linda Dalrymple Henderson, "A New Facet of Cubism: The Fourth Dimension and Non-Euclidian Geometry Re-interpreted," *Art Quarterly* 4, no. 34 (Winter 1971): 411-33; Rose-Carol Washton-Long, "Kandinsky and Abstraction: The Role of the Hidden Image," *Artforum* 10 (June 1972): 42-49; Carel Blotkamp, et al., *Het Nieuwe Wereldbeeld: Het begin van de abstracte kunst in Nederland 1910-25* exh. cat. (Utrecht: Centraal Museum, 1972); Douglas, "Views from the New World: A. Kruchenykh and K. Malevich: Theory and Painting," *Russian Literature Triquarterly*, no. 12 (Spring 1975): 353-70.

270. Maurice Tuchman, Preface in: Tuchman and Judi Freeman, eds., *The Spiritual in Art: Abstract Painting 1890-1985* exh. cat. (New York: Abbeville Press and Los Angeles County Museum of Art, 1986), 13. For a more complete listing of publications in this series see p. 59, endnote 17.

271. John Wilmerding, "Fire and Ice in American Art: Polarities from Luminism to Abstract Expressionism," in: Kynaston McShine, ed., *The Natural Paradise: Painting in American 1800-1950* (New York: MOMA, 1976). The participation of Robert Rosenblum and Barbara Novak in this project no doubt determined this new approach to the work.

272. His own publications and his anthology *Russian Art of the Avant-Garde: Theory and Criticism 1902-1934* published in Robert Motherwell's "The Documents of 20th Century Art" series (New York: Viking, 1976) re-initiated Western art historical study of the Russian avant-garde.

273. Interviews with Douglas and Washton-Long, Boston, 24 February 1996. Their monographs on Kandinsky and Malevich appeared in 1980: Douglas, *Swans of Other Worlds: Kazimir*

Malevich and the Origins of Abstraction in Russia (Ann Arbor: UMI Research Press, 1980); Washton-Long, *Kandinsky and the Development of an Abstract Style* (Oxford: Clarendon Press, 1980).

274. Bowlt, "Concepts of Color and the Soviet Avant-Garde" (21-29) and Douglas "Colors Without Objects: Russian Colour Theories (1908-1932)" (30-41), in *The Structurist* 13/14 (1973/74); and Douglas, "The Universe: Inside and Out: New Translations of Matyushin and Filonov" (pp. 72-79); Henderson, "The Merging of Time and Space: 'The Fourth Dimension' in Russia From Ouspensky to Malevich" (pp. 97-108); Beck, "Movement and Reality: Bergson and Cubism" (109-116); Alan Gussow, "The Ecological Viewpoint: Nature as Source, not Scene": (132-137); Eli Bornstein, "Art Toward Nature" (142-55) in *The Structurist* no. 15-16 (1974-75). Bornstein's theoretical contribution to the aesthetic discourse of nature/art issues is a subject requiring further investigation. See the Bibliography for a partial listing of his writings on this subject.

275. Linda Dalrymple Henderson, *The Fourth Dimension and Non-Euclidean Geometry in Modern Art* (Princeton N.J.: Princeton University Press, 1983); Siegmund Holsten, *Kosmische Bilder in der Kunst des 20. Jahrhunderts*, exh. cat. (Baden Baden: Staatliche Kunsthalle Baden Baden, 1983). See also Henning Genz's article "Natur, Naturgesetze und Bilder" (pp. 25-32).

276. Tuchman and Freeman, eds., *The Spiritual in Art: Abstract Painting 1890-1985*. The other authors are Flip Bool, Charles C. Eldredge, Robert Galbreath, W. Jackson Rushing and Harriet Watts.

277. Sixten Ringbom, "Paul Klee and the Inner Truth to Nature," *Arts Magazine* 52 (September 1977): 112-17. Also: Robert Metzger, "Arthur Dove and Biomorphism," Chapter Two in 'Biomorphism and Abstract Painting and "Charlotte Stokes, "The Scientific Methods of Max Ernst: His Use of Scientific Subjects from *La Natur*," *The Art Bulletin* 62 (September 1980): 453-65. In relation to Klee, note the publications of Sarah Lynn Henry, Sixten Ringbom, Volker Harlan and Fujio Maeda in this connection. See: John Bowlt, "Pavel Filonov: An Alternate Tradition?" *Art Journal* (Spring 1975): 208-16. See also the Arp, Ernst, Kandinsky and Klee sections of the Bibliography.

278. Stephanie Poley, *Hans Arp: Die Formensprache im plastischen Werk* (Stuttgart: Gerd Hatje, 1978).

279. In his book *Modern Sculpture: The New Old Masters* (New York: Dodd, Mead & Co., 1974), Herbert Christian Merrillat includes a chapter entitled "Curves of Nature," in which he discusses the biomorphic abstract sculpture of Brancusi, Arp and Moore. While he discusses this work in terms of nature-

centredness and an interest in natural forms such as "shells, bones and pebbles" (p. 39), his discussion is unsystematic, anecdotal, and fails to connect the artists with any coherent philosophical discourse.

280. Charlotte Douglas, "Evolution and the Biological Metaphor in Modern Russian Art," *Art Journal* 44, no. 2 (Summer 1984): 153-161. See also the section "Analytische Kunst -- Organische Kultur" in the exhibition and exhibition catalogue *Die grosse Utopie. Die russische Avantgarde 1915-1932* (Frankfurt: Schirn Kunsthalle, 1992).

281. Douglas, "Evolution and the Biological Metaphor," 153.

282. Mundy in *Creation: Modern Art and Nature* exh. cat. (Edinburgh: Scottish National Gallery, 1984).

283. Jennifer Mundy, "Form and Creation: The Impact of the Biological Sciences on Modern Art, in *Ibid.*, 23. Jennifer Mundy completed a dissertation entitled "Biomorphism" at the Courtauld Institute of Art in London in 1987. Mundy has, to my knowledge, not published any part of this work and despite data-base searches for relevant dissertations I undertook during the early 1990s, I only learned of it from a reference in Romy Golan's *Modernity and Nostalgia: Art and Politics in France Between the Wars* (New Haven: Yale University Press, 1995), 181 and I gained access to it after my own dissertation was substantially completed. Thus, I have not incorporated its results into my own, which, despite overlaps in research results (e.g. my re-discovery in this chapter of Grigson's importation of Haddon's term "biomorph" into the Modernist discourse), represent approaches sufficiently different to render the two theses complementary rather than repetitive.

284. Richard Verdi, *Klee and Nature* (Munich: Zwemmer, 1984). The exhibition was entitled "Paul Klee: Wachstum regt sich. Klees Zwiesprach mit der Natur." The catalogue in English: Ernst-Gerhard Güse, ed., *Paul Klee: Dialogue with Nature*. With contributions by Güse, Meinrad Maria Grewenig and Richard Verdi. (Munich: Prestel, 1991). Verdi's article is on "Botanical Imagery in the Art of Klee."

285. Sherrye Baker Cohn, "The Dialectical Vision of Arthur Dove: The Impact of Science and Occultism on his Modern Art" (Ph.D. dissertation, Washington University, 1982); Cohn, *Nature as Symbol*; See also Arlette Jean Klaric, "Arthur G. Dove's Abstract Style of 1912: Dimensions of the Decorative and Bergsonian Realities" (Ph.D. dissertation, The University of Wisconsin, Madison, 1984).

286. Vivian Endicott Barnett, "Kandinsky and Science: The Introduction of Biological Images in the Paris Period," in: *Kandinsky in Paris: 1934-1944 exh. cat.* (New York: Guggenheim Museum, 1985), 61-87.
287. Jeffrey Weiss, "Late Kandinsky: From Apocalypse to Perpetual Motion," *Art in America* (September 1985): 124.
288. Evelin Priebe, *Angst und Abstraktion: Die Funktion der Kunst in der Kunsttheorie Kandinskys* (Frankfurt/Main: Peter Lang, 1986). See: Carola Giedion-Welcker, "Kandinsky's Malerei als Ausdruck eines geistigen Universalismus," *Werk 37* (April 1950): 119-23.
289. Harriet Watts, "Arp Kandinsky, and the Legacy of Jakob Böhme," in Tuchman and Freeman, eds., *The Spiritual in Art*, 239-55.
290. Rolf Wedewer, "Zur Naturvorstellung Arps," *Pantheon* 43 (1985): 171-8; Janet Lindsay, "Between Art and Nature: The Metamorphic Sculpture of Jean Arp," *Bulletin of the Detroit Institute of the Arts* 61, no. 4 (1984): 15-21; Andreotti, *The Early Sculpture of Jean Arp* (Ann Arbor: UMI Research Press, 1990); Andreotti, "A New Unity of Man and Nature: Jean Arp's Growth of 1938." *Museum Studies* 16, no. 2 (1990): 132-45.
291. Thomas Brandt, "Von der Reduktion zum Wachstum. Vom Wandel geometrischer Formen in den 30er Jahren," in 1937. "...und nicht die leiseste Spur einer Vorschrift": *Positionen unabhängiger Kunst in Europa um 1937 exh. cat.* (Düsseldorf: Kunstsammlung Nordrhein-Westfalen, 1987), 23-34.
292. Janice Schall, "Rhythm and Art in Germany: 1900--1930," Ph.D. dissertation. (The University of Texas at Austin, 1989), 367.
293. Schall, "Rhythm and Art," 100.
294. *Ibid.*, 369.
295. Gladys Fabre, *Abstraction Création 1931-1936 exh. cat.* (Paris: Musée d'Art Moderne de la Ville de Paris, 1978), 23-28; and Fabre, "Synthetic Art."
296. Fabre, "Synthetic Art," 396-97 and Fabre, *Tutundjian* (Paris: Editions du Regard, 1994), 39. Jennifer Mundy had preceded her in "Form and Creation," of 1984.
297. See Tom Armstrong, Foreword in: Lisa Phillips, *Vital Signs: Organic Abstraction from the Permanent Collection exh. cat.* (New York: Whitney Museum of American Art, 1988), 5.

298. See Douglas Dreishpoon, "Natural Inflections of the Abstract Sculptural Object," in Katy Klein, ed., *Natural Forms and Forces: Abstract Images in American Sculpture* exh. cat. (Cambridge Mass.: List Visual Arts Center, MIT, 1986), 9. See also: Peter Morrin and Jean E. Feinberg, *Content in Abstraction: The Uses of Nature* exh. cat. (Atlanta: High Museum of Art, 1983), Nancy Doll, *Inner Nature: Four Contemporary Painters* exh. cat. (Santa Barbara: Santa Barbara Museum of Art, 1990), and Deni McIntosh McHenry, *Organic Abstraction* exh. cat. (Kansas City: Nelson Atkins Museum, 1991).

299. Lichtenstern, *Metamorphose in der Kunst des 19. und 20. Jahrhunderts*. It is unfortunate that Lichtenstern does not seem to know of Ritterbush's work, which -- more than twenty years before her own publication -- touches on so many themes common to her concerns.

300. Lichtenstern, *Metamorphose: Vom Mythos zum Prozessdenken*, 166-193.

301. Christa Lichtenstern, "Biomorphism," Jane Turner, ed., *The Dictionary of Art* (New York: MacMillan, 1996), vol. 4: 74-5.

302. Ida F. Mihály, "A 'Bauhaus'-szal kapcsolatos levelek Kállai Ernő hagyatékából" [Letter with Bauhaus links from Ernő Kállai's papers] *Művészettörténeti Dokumentációs Központ Közleményei* 3 (1963): 46-84 and Lajos Kassák, "Emlékezés Kállai Ernőre" [Remembering Ernő Kállai] *Valóság* [Reality] no. 8 (1965).

303. Izabella Miczbán, "Ein Versuch, eine Parallele zwischen den Informationen der Zytogramme und denen der Non-Figurativen bildenden Kunst zu ziehen, im Sinne der 'Bioromantik' von Ernst Kállai," in *Acta Congressus Internationalis XXIV Historiae Artis Medicinae* (1974) (Budapest: Semmelweiss Múzeum, 1978), 963-68. Miczbán was a personal friend of Kállai's. See Éva Forgács, *Bevezetés* [Introduction] *Művészet veszélyes csillagzat alatt*, 13, and note 12.

304. Júlia Szabó, "Kállai Ernő szellemi hagyatéka" [The intellectual legacy of Ernő Kállai]. *Művészet* 16, no. 8 (August 1975): 42-45; Éva Forgács, "Kállai Ernő és a konstruktivizmus" [Ernő Kállai and Constructivism] *Ars Hungarica* no. 2 (1975): 277-94; Forgács, ed., Kállai, *Művészet veszélyes csillagzat alatt*. Éva Körner's study of Kállai's Constructivism was published only later, in *Új Művészet* no. 6 (June 1993): 74-97. For a list of subsequent writings by Forgács on Kállai, see endnote 74 in Chapter Four.

305. Gábor András and Ottó Mezei, *Kállai Ernő emlékezete* [Remembering Ernő Kállai] exh. cat. (Budapest: Óbuda Galéria, 1982); Gábor András, *Grafikák Kállai Ernő hagyatékából* [Graphic works from Ernő Kállai's *Nachlass*] exh. cat. (Budapest: Óbudai Pincegaléria, 1984); Gyarmathy Tihamér *Kállai Ernő emlékére* exh. cat. [Tihamér Gyarmathy's exhibition in honour of Ernő Kállai] (Budapest: Műcsarnok, 1986).

306. See Pataki and Péter György's monograph *Az Európai Iskola és az Elvont Művészek Csoportja* [The European School and the Abstract Artists' Group] (Budapest: Corvina, 1990) and Pataki, "Technoromantik," in Hubertus Gassner, Karlheinz Kopanski and Karin Stengel, eds., *Die Konstruktion der Utopie: Ästhetische Avantgarde und politische Utopie in den 20er Jahren* (Kassel and Marburg: documenta Archiv and Jonas Verlag, 1992), 203-8.

307. Éva Forgács, "Ernő Kállai: The Art Critic of a Changing Age," *The New Hungarian Quarterly* no. 64 (1976): 174-81; Oliver Botar, "Ernő Kállai and the Hidden Face of Nature," *The Structurist* no. 23-24 (1983-84): 77-82. Forgács's talk given at a Hungarian Studies conference in Toronto in 1989 appeared as "New Perspectives on Ernő Kállai's Concept on Constructivism" in *Acta Historia Artium Hungariae* 35 (1990-92): 27-33.

308. Tanya Frank, ed., and Afterword, Ernst Kállai, *Vision und Formgesetz: Aufsätze über Kunst und Künstler von 1921 bis 1933* (Leipzig and Weimar: Gustav Kiepenheuer Verlag, 1986); Hubertus Gassner, "'Ersehnte Einheit' oder 'erpresste Versöhnung': Zur Kontinuität und Diskontinuität ungarische Konstruktivismus-Konzeption," in Gassner, ed., *Wechselwirkungen: Ungarische Avantgarde in der Weimarer Republik* exh. cat. (Marburg: Jonas Verlag, 1986), 212-214.

309. These two scholars are Monika Wucher of the University of Hamburg and myself. I presented a paper on "Kállai and the Natural Sciences in Weimar Germany."

310. Gassner, Kopanski and Stengel, eds., *Die Konstruktion der Utopie: Ästhetische Avantgarde und politische Utopie in den 20er Jahren*. Papers on Kállai by Forgács, Wucher and Pataki appeared in this anthology. Some of the papers held at the Budapest conference will be published in an upcoming issue of *Acta Historiae Artium*.

311. Frank, Afterword, *Vision und Formgesetz*, 272 and Christian Bromig, "Biomorphismus oder Anthropomorphismus? Einige kritische Anmerkungen zu Michael Krögers Aufsatz..." *Kritische Berichte* 19, no. 2 (1991): 92-107.

312. The only exception to this tendency has been Bromig, who agrees in this respect with the cited members of the previous generation.

313. Ibid., xiv.

314. Ibid., xix.

315. Ibid.

316. Ute Eskildsen, "Fotokunst statt Kunstphotographie: Die Durchsetzung des fotografischen Mediums in Deutschland 1920-1933," in Eskildsen and Jan Horak, eds., *Film und Foto der zwanziger Jahre: Eine Betrachtung der Internationalen Werkbundausststellung 'Film und Foto' 1929* (Stuttgart: Gerd Hatje, 1979), 8-25.

317. Gert Mattenklott, "Kunst, Natur und Technik um 1900," in *Karl Blossfeldt 1865-1932. Das photographische Werk* (Munich: Schirmer/Mosel, 1981).

318. Siegfried Wichmann, *Jugendstil Art Nouveau: Floral and Functional Forms* (Boston: Little, Brown and Co., 1985).

319. Christoph Kockerbeck, *Ernst Haeckels 'Kunstformen der Natur' und ihr Einfluss auf die deutsche bildende Kunst der Jahrhundertwende: Studie zum Verhältnis von Kunst und Naturwissenschaften im Wilhelminischen Zeitalter* (Frankfurt/Main: Peter Lang, 1986). Kockerbeck, however, does not seem to have been aware of Mattenklott's writing on Blossfeldt.

320. Thomas Kröger, "'...gleichsam biologische Urzeichen...' Die Erfindung biomorpher Natur in Malerei und Fotografie der dreissiger Jahre." *Kritische Berichte* 18, no. 4 (April 1990): 73-87; Bromig, "Biomorphismus oder Anthropomorphismus?."

321. Kröger, "Die Erfindung biomorpher Natur," 75.

322. Bromig, "Biomorphismus oder Anthropozentrismus?," 96-97.

323. Ibid., note 37.

324. See Kállai's anticipation of attacks on *Bioromantik* and his critical support of it from both the Communists and the National Socialists in "Zurück zum Ornament," 226.

325. Golan, *Modernity and Nostalgia*, Chapter Three.

326. See for example, her uncritical and undefined usage of the term "progressive" on page 77 in relation to Le Corbusier: "By joining *Plans*, Le Corbusier continued to side with the most progressive faction among the *planistes*. See also her discussion of what is in effect French biocentric thought (Neo-Lamarckism, "positive" Eugenics, etc.) on pages 97-98. It is to her credit that even though she has not set up a framework adequate to handle biocentric phenomena such as Le Corbu-

sier and the *Planistes*, and she recognizes the interconnections with contemporary Fascist thought, she resists labeling them as "Fascist." I wish to note here that despite my critique of aspects of her book (which I find to be both original and fascinating), it must be emphasized, that she is among the few authors on artistic antimodernism to warn against overly simplistic political analyses. "There is no straight line from Verdun to Vichy," she notes on page xi.

327. E.A. Séguy, "Rythmes naturels, métaux et bois," *Arts et Décorations* 59 (January-June 1931): 75. Cited in Golan, *Modernity and Nostalgia*, 92-93, 189. While in the Introduction I touch on the French equivalent of the German and Czech discourses on microscopy and nature, I cannot here engage in a discussion of it. For an overview, see Fabre, "Arts de synthèse."

328. Golan, *Modernity and Nostalgia*, 92.

329. Vitali and Gassner, eds., *Élan Vital* .

330. I was introduced to Kállai's writings by various Budapest art historians during a year on an exchange scholarship there in 1979-80. These historians included Júlia Szabó, Katalin Keserü and later Éva Forgács. It was László Beke, however, who first emphasized to me the importance of Kállai's *Bioromantik* conception. See my article "Ernő Kállai and the Hidden Face of Nature," written in 1983.

331. Botar, "A Fresh Look at Modernist Art of the 1920s and 1930s: Ernő Kállai's Conception of *Bioromantik*," *History of Art Colloquia*, University of Toronto, Department of Fine Art, February 1993.

332. Christoph Vitali, "Einführung in die Ausstellung," *Élan Vital*, 15.

333. See Krauss' "No More Play" (1983) and "The Photographic Conditions of Surrealism" (1981), in her *The Originality of the Avant-Garde and Other Modernist Myths* (Cambridge and London: The MIT Press, 1985).

334. This may have been in deference to mine and Wucher's works in progress. Vitali mentions Kállai in his introduction, p. 11.

335. George Rousseau, "The Perpetual Crises of Modernism and the Traditions of Enlightenment Vitalism: With a Note on Mikhail Bakhtin," in Burwick and Douglass, eds., 1992, 56.

336. Gunter Martens, *Vitalismus und Expressionismus. Ein Beitrag zur Genese und Deutung expressionistischer Stilstrukturen und Motive* (Stuttgart: Verlag W. Kohlhammer, 1971).
337. Ritterbush and Kuhn are the two figures on whose research Haraway bases her own work. Donna Jeanne Haraway, *Crystals, Fabrics, and Fields: Metaphors of Organicism in Twentieth-Century Developmental Biology* (New Haven: Yale University Press, 1976). For her discussion of Ritterbush's *Art of Organic Forms*, see pp. 11-13.
338. *Ibid.*, 40.
339. M. H. Abrams, *The Mirror and the Lamp* (New York: Oxford, 1953).
340. George S. Rousseau, ed., *Organic Form: The Life of an Idea* (London and Boston: Routledge & Kegan Paul, 1972).
341. Arthur Lovejoy, *The Great Chain of Being: A Study in the History of an Idea* (Cambridge Mass.: Harvard, 1950).
342. Some of these are Sarah M. R. Ramsey, "Revolution, Reciliation, and Transition: Organic Philosophy in Late Eighteenth- and Early Nineteenth-Century France" (The University of Texas at Dallas, 1986); Thomas W. Strawman's "The New Myth of Organicism: Recreation of Self and Society in Eighteenth-Century Philosophy and Aesthetic Theory" (University of Washington, 1987); Robert S. Davis, "The Organic Way to Experience: A Theory and Study of Organic Form in Nineteenth-Century British Novels" (Miami University, 1988); Kyungwon Shin, "The English Origins of Wordsworth's Organicism" (University of Minnesota, 1989), Laura Walls Dassow, "Seeing New Worlds: The Consilience of Emersonian Wholes and Humboldtian Science in Henry David Thoreau" (Indiana University, 1993). While most of these studies are solid examples of scholarship, there have been earnest failures as well, notably Betty Jean Craige's *Laying the Ladder Down: The Emergence of Cultural Holism* (Amherst Mass.: The University of Massachusetts Press, 1992).
343. Frederick Burwick, ed., *Approaches to Organic Form: Permutations in Science and Culture* (Dordrecht: D. Reidel, 1986).
344. Paul Douglass, "In and Out of Time: Eliot, Faulkner, and the Legacy of Bergson," (Ph.D. dissertation, University of California, Los Angeles, 1981).
345. Abrams, *The Mirror and the Lamp*; Carlos Baker, *The Echoing Green: Romanticism, Modernism, and the Phenomena of Transference in Poetry* (Princeton: Princeton University Press, 1984).

346. Douglass, "Organicism Among the Moderns," 253. Douglass' comment on literary studies seems to mirror the situation in art history: "For a variety of reasons, we do not presently pay much attention to the growth of these ideas from Coleridge through Bergson... The falling from fashion of the mystical and metaphorical has caused a neglect of Bergson in historical overviews of Modernist aesthetics. We seem more concerned to make the Modernists assent to post-structuralism than to understand the development of Modernism itself. Thus, books like Kiely's *Modernism Reconsidered* (Harvard, 1981) do not even mention Bergson or consider organicism.... [they seem] to grasp only vaguely the historical development of [their] own subject matter." (pp. 267-68) Shortly after this article, Mary Ann Gillies completed her Ph.D. dissertation on "The Influence of Henri Bergson on Early Modern British Literature" (Oxford University, 1989).

347. Douglass, "Organicism Among the Moderns," 254.

348. *Ibid.*, 255.

349. Frederick Burwick and Paul Douglass, eds., *The Crisis in Modernism: Bergson and the Vitalist Controversy* (Cambridge: Cambridge University Press, 1992).

350. Paul Douglass, "Deleuze's Bergson: Bergson redux," in Burwick and Douglass, eds., *The Crisis in Modernism*, 368, 370.

351. *Ibid.*, 385.

352. Dorner, *The Way Beyond Art*, 15-16.

353. Gilles Deleuze, *Le Bergsonisme* (1966) trans. Hugh Tomlinson and Barbara Habberjam (New York: Zone Books, 1988); Henri Focillon, *The Life of Forms in Art* (1934) trans. Charles Beecher Hogan and George Kubler (New York: Zone Books, 1992); Kurt Goldstein, *The Organism* (New York: Zone Books, 1995).

354. See, for example, Mark C. Taylor, *Deconstruction in Context*.

355. Vattimo, *The End of Modernity*, 164.

356. Shustermann, "Organic Unity," 101.

357. Veran Andermatt Conley, "Eco-Subjects," in: Conley, ed., *Re-Thinking Technologies* (Minneapolis: University of Minneapolis Press, 1993), 80.

CHAPTER TWO

Biocentrism

In some remote corner of the universe ... there once was a star on which clever animals invented knowledge. That was the haughtiest and most mendacious minute of "world history" -- yet only a minute. After nature had drawn a few breaths the star grew cold, and the clever animals had to die. (Nietzsche 1873):

[Anthropism is] that powerful and world-wide group of erroneous opinions which oppose the human organism to the whole of the rest of nature, and represents it to be the preordained end of organic creation, an entity essentially distinct from it.... the so-called history of the world -- that is, the brief period of a few thousand years which measures the duration of civilization -- is an evanescently short episode in the long course of organic evolution, just as this, in turn, is merely a small portion of the history of our planetary system; and as our mother-earth is a mere speck in the sunbeam in the illimitable universe, so man himself is but a tiny grain of protoplasm in the perishable framework of organic nature. (Haeckel 1899)²

Denken wir uns einen Gott, der ... von einer Sonne aus ... sich verhalte ebenso ... gleichgültig, wie wir ... gegenüber ... einem Ameisenhaufen...[:] "Das sind nun 1800 Millionen Menschen, welche wie lebender Schimmel die Erde überkrusten, ihre alten Wälder abholzen, ihre tiefen Meere durchtauchen, ihre Pflanzen und Tiere ausrodern ...und ... sich selber halten für den Mittelpunkt einer Welt ... bis ... sie allesamt wieder ins Gras beißen und abmarschieren ins grosse Nichts.... Aber ... mit all ihren ... Lehren, Künsten, Gedanken und Geschäften erfüllen sie unbewusst nur das grosse Gebot der grossen Meistern: *Die Not*." (Lessing 1924)³

"In relation to the history of organic life on earth," writes a modern biologist, "the paltry fifty millennia of *homo sapiens* constitute something like two seconds at the close of a twenty-four-hour day. On this scale, the history of civilized mankind would fill one-fifth of the last second of the last hour." The present, which as a model of Messianic time, comprises the entire history of mankind in an enormous abridgement, coincides exactly with the stature which the history of mankind has in the universe. (Benjamin 1940)⁴

We know ... of every organism that the rhythm, form, and duration of its life ... are determined by the *properties of its species*.... In [nature] we feel ... a *limit*, and this sense of the limit is identical with our sense of the inward form. In the case of higher human history, on the contrary, we take our ideas as to the course of the future from an unbridled optimism that sets at naught all historical, i.e. *organic*, experience.... "Mankind," however, has no aim, no idea, no plan, any more than the family of butterflies or orchids. "Mankind" is a zoological expression.... Each culture has its own new possibilities of self-expression which arise, ripen, decay and never return.... These cultures ... belong ... to the living Nature of Goethe, and not to the dead Nature of Newton. I see world history as a picture of endless formations and transformations, of the marvellous waxing and waning of organic forms. (Spengler 1918)⁵

Denn ich hatte verstanden: Es gibt keine Arten und Gattungen und Familien und Tier- und Pflanzengruppen, es gibt keine Tiere und Pflanzen, keine Protisten, keinen Unterschied von Tier und Mensch; es gibt ein vieltausendfach sich anpassendes einheitliches Leben auf Erden, wenn man so will, ein einziges Geschöpf, dessen Name ist Plasma. (Francé 1927)⁶

The artist today is more than an improved camera.... He is a creature on the earth and a creature within the whole, that is to say, a creature on a star among stars.⁷ [He] cannot do without his dialogue with nature, for he is a man, himself of nature, a piece of nature and within the space of nature. (Klee 1923)⁸

[Bioromantic artists] rücken Dinge in unsere eigenste Mitte, denen wir uns gar zu gern entrückt und überlegen dünken möchten, um unserer menschlichen ... Einbildung zu schmeicheln, dass wir Herren der Schöpfung seien und nicht etwa hinfällige Kreaturen. Die Bioromantik scheut es nicht, mit offenen Augen in diese Abgründe unserer Kreatürlichkeit zu blicken. (Kállai 1932)⁹

In der Biozentrik eint sich Denken und Leben. (Francé 1921)¹⁰

The whole biosphere ... and the role that human life plays in it are encompassed in one unified vision. The biocentric outlook ... provides a general "map" of the natural world, enabling us to see where we

are and how we fit into the total scheme of things From the perspective of the biocentric outlook we see ourselves as biological creatures. Without denying . . . our uniqueness, we nevertheless become fully aware that we are but one species of animal life. (Taylor 1986)¹¹

1. Framing Intellectual History

In this chapter I frame the types of views expressed in these passages as "biocentrism." Adapting the term from early 20th century German usage, I define biocentrism as the neo-Romantic, biologicistic, Holistic, "nature"- and "life"-centric rather than anthropocentric intellectual stream.¹² Political conditions and a shift in emphasis among some biocentric philosophers after World War One further demand the distinction between turn-of-the-century and interwar biocentrism. It is the interaction of biocentrism with biomorphic Modernism and the naturamorphic analogy in Western art of the first half of the 20th century which comprise the "Bioromantic" cultural pattern.

Framing biocentrism -- even in a preliminary, sketchy, amateur fashion such as I am able to undertake here -- is a challenging task, for the picture is complex. While historians of ideas have studied some components of biocentrism, others have received little or no attention, and the ill fit of these elements into the prevailing historiographic framework is largely unexamined.¹³ Most importantly -- and this is where the proposed category of biocentrism comes into play -- despite hints and near-misses, no adequate attempt has been made to define a category in the history of ideas broad enough to be useful to cultural historians concerned with attitudes towards nature and their expression through art in the relevant period, and yet sufficiently specific to reflect the concerns of the artists.¹⁴ As a cultural/art historian delving into the field of "straight" intellectual history, there is

bound to be a degree of superficiality, indeed naiveté in such an undertaking, and I readily admit this. There is also an apparent circularity in this strategy: I define the category, I use the category in my work, and this usage then "proves" the legitimacy of the category. But while the naiveté is something the informed reader will have to contend with, the circularity of the argument is only a problem if the reader assumes that I wish to "prove" anything. Rather than *proof*, I am interested in a *reframing* which *makes visible*.

a. *Fin-de-siècle* Neo-Romanticism

Nietzsches Philosophie des Vormittags verdickte sich bald zu allerhand vitalistischen oder sonnenpries-terlichen Weihen des grossen Pan, der Welt als tönendem Glücksrad. Und merkwürdig verband sich vielerlei davon -- via Bölsche, Fidus, 'Hab Sonne im Herzen,' 'Der Wald ist meine Kirche' -- mit einer Art von poetisch gemachtem, doch abgestandenem Naturkult.... [D]er immer mehr verdinglichte Mensch rebellierte nun in allen seinen ... Partien ... indem er die Mechanik ringsum lediglich zu verlebendigen suchte, ... Haeckels 'Welträtsel' mit ihrer sonnigen Banalität, sozusagen pantheisteln gemacht Mechanik, passten von hier aus nicht schlecht zum Jugendstil. (Bloch 1927)¹⁵

What characterized the Romantic movement, above everything else, was its universal striving for unity and integration with the living order of creation. (Wiedmann 1979)¹⁶

I want to go beyond emotion to give order to movement. *The new romanticism*. (Klee 1914)¹⁷

The turn of the century was characterized by a revival of aspects of Romanticism, among them an intuitive, idealistic, Holistic, even metaphysical attitude towards the idea of "nature," of the experience of the unity of all life, what Max Scheler referred to as *Vitalmystik* and its *kosmovitale Einsfühlung*; what Bloch ironically termed *Hurrapantheismus*.¹⁸ Scheler described the revival as "die unmittelbar gegenwärtigen Gruppen von Bewegungen die, ohne oder mit Anknüpfung an

die grosse Reaktionsbewegung der Romantik, die Gestalt des menschlichen Herzens erneuern wollen (Fechner, Bergson, Phänomenologie, Vitalismus, Kreis um Stefan George, Jugendbewegung)."¹⁹ Nietzsche referred to this unity of life as *All-Leben*, while in a more scientific vein, the influential, but now all-but-forgotten Austro-Hungarian biologist and popular scientific writer Raoul Heinrich Francé (1874-1943) referred to it as *Plasma*.²⁰ It is these two impulses, *vitalmystik* and biologism, which characterize the phenomenon most succinctly. It is to be located in what intellectual historian Niles Holt has termed "the decline of materialistic and mechanistic interpretations in Europe in the decade and one-half after 1900," as Kurt Bayertz phrases it, "the broad spectrum of biogistic thought at the turn of the century," or, as Bloch saw it, in the transmutation of the mechanistic into the pantheistic. It is within this context that Holt places the work of *Lebensphilosophen* and biologists such as Henri Bergson, Hans Driesch, Eduard von Hartmann and Ernst Haeckel.²¹

i. Antimodernity and *Kulturkritik*

Schrecklich ... sind die Wirkungen des 'Fort-schritts' auf das Bild besiedelter Gegenden. Zerrissen ist der Zusammenhang zwischen Menschenschöpfung und Erde, vernichtet für Jahrhunderte, wenn nicht für immer, das Urlied der Landschaft.... Unter den Vorwänden von 'Nutzen,' 'wirtschaftlicher Entwicklung', 'Kultur' geht er in Wahrheit auf *Vernichtung des Lebens* aus. (Klages 1913)²²

The coming to presence of technology threatens revealing, threatens it with the possibility that all revealing will be consumed in ordering and that everything will present itself only in the unconcealedness of standing-reserve. (Heidegger 1949/53)²³

Daraus entstanden ein Neudionysiertum à la Klages, ein Neudiluvium à la C.G. Jung, ein Rückgang auf Vorbewusstes, Vorgeschichtliches [Dacqué], als wäre es das verlorene Heil, mit Preis des Chaotischen als solchem. (Bloch 1927)²⁴

Der entscheidende Einfluss der Technik auf die künstlerische Entwicklung der letzten 50 Jahre ist unverkennbar. Die ungeheure Ausbreitung ihrer Energien und Werke zu einem dichten Netz von Rationalisierung und Motorisierung nicht nur der Natur sondern auch wesentlicher Beziehungen des menschlichen Lebens musste alle Reserven unserer Irrationalität, unserer Seele wachrufen. Je mehr Technik, um so heftiger und inniger die Sehnsucht nach ihren Gegengewichten.... (Kállai 1931)²⁵

A critique of modernity and of its humanist ideology was inherent in this nature-centric Neo-Romanticism.²⁶ This critique, one which masked a profound pessimism concerning humanity's place in nature, was the darker side of *kosmische Einheitsgefühl*, of *Hurrapantheismus*. As I have discussed in the Introduction, in America William James' and Bergson's ideas combined with the Transcendentalist revival -- the latter expressed for example in the pioneering environmentalist activities of John Muir and the Sierra Club -- into what Jackson Lears has termed "anti-Modernism."²⁷ The European and American trends revived themes of Romanticism, and can be seen to have formed part of a pan-Western "anti-Modernist" cultural current which Giovanni Vattimo has aptly characterized as the "crisis of Humanism."²⁸ The Germans refer to it as *Kulturkritik*, a critique of modernity -- that is rampant urbanization, industrialization, capitalization, commodification, internationalization, and the instrumentalist view of nature -- carried out mainly by *Lebensphilosophen*.²⁹ As the turn-of-the-century vegetarian and naturopath Adolf Just wrote, "Das Grosstadtleben verdirbt Körper, Geist und Seele, weil es immer mehr von der Natur und allem Natürlichen hin wegführt." He goes on: "Wodurch ist zum grossen Teil das Elend, die Verlorenheit und Verlogenheit der Menschen gekommen? Durch die Entwicklung des Geistes in seinem Wissenschaftlichen, durch Erfindungen und Technik, die zum grossen Teil die körperliche Arbeit den Maschinen übertragen und dadurch auf allen Gebieten eine dementsprechende Mechanisierung des Lebens hervorriefen."³⁰ *Kulturkritik* was expressed through the widespread cult

of Nietzsche, the international network of *fin-de-siècle* reformist impulses which German speakers conveniently refer to as "Lebensreform," as well as the ecological wing of the early 20th century *Jugendbewegung* [Youth Movement] and the concurrent pedagogical renewal, the *Schulreformbewegung*.³¹ As Franz Sawicki poetically expresses it, this was an attack on "die einseitige Verstandskultur, die das Herz unbefriedigt und die dunkeln Tiefenschichten der Seele ausser acht lässt, die wohl Licht spendet, aber den Boden ausdörret, so dass die Wurzeln des Lebens absterben."³² Or as Ferdinand Fellmann phrased it, *Lebensphilosophie* was a reaction, which "richtet sich generell gegen überzogene Absolutheitsansprüche der Vernunft."³³ As we see in the passage at the start of this section, in 1931 Ernő Kállai interpreted the history of Modernist art as a dialectical struggle between the celebration and counteracting of modernity, between "nature" and what he termed the "profane Trinity rationalism-materialism-utilitarianism."³⁴

While Martin Heidegger's phenomenological-ontological critique is characteristically expressed in a language which animates causal categories by employing the infinitive case (a sort of epistemological animism), and it is more general than those of lesser *Lebensphilosophen*, his message is the same: modernity (as an intensification of technology) is a great danger to people and nature; it prevents them from being experienced in any other way than as potential raw material, what he refers to as "standing reserve." This critique emerged from what Sawicki defines as the central problem of *Lebensphilosophie*: the distinction between *Geist*, or intellect, and *Seele*, which is the locus of *Leben*, or life:

Der Begriff des *Lebens* ist an sich so umfassend, dass er auch die Funktionen des Geistes umschliesst. Von der Lebensphilosophie wird der Begriff jedoch gewöhnlich in einem engeren Sinne genommen und das Leben in Gegensatz zum Geiste gestellt. Das menschliche Ich zerfällt danach in zwei Sphären. Die rationale Sphäre ist der Geist. Die tiefere, irrationale Schicht ist die Seele. Dazu gehören die Triebe, die

Gefühle, das gefühlsmässige Erkennen und das Unterbewusste. Was sich dort regt, ist das wahre Leben. Die Lebensphilosophie ist also der Aufstand der irrationalen Tiefe gegen die Vorherrschaft des Geistes.³⁵

As Bloch suggests the deeper, unconscious self along with its impulses, the "Dionysian" self, is in this system valorized as the "authentic" self, the self which should be consulted (through "intuition," for example) to ensure authentic expression. This search for authenticity in the *Seele* rather than the *Geist* underlies the "primitivism" of the Modernist project, and "primitivism" is the central aesthetic impulse of both biomorphic Modernism and the "elementarism" of early 1920s geometric abstraction, just as it is of much Modernist artistic production.³⁶ Georg Lukács suggests this in his account of neo-Nature Romanticism:

"They are what we once were," says Schiller of the forms of nature, "they are what we should once more become." But here ... we discover a ... conception of nature ... in which we can clearly discern the ideal and the tendency to overcome the problems of a reified existence. "Nature" here refers to authentic humanity, the true essence of man liberated from the false, mechanising forms of society: man as a perfected whole who has inwardly overcome, or is in the process of overcoming, the dichotomies of theory and practice, reason and the senses, form and content; man whose tendency to create his own forms does not imply an abstract rationalism which ignores concrete content; man for whom freedom and necessity are identical.³⁷

The transposition of the scientific debate to the metaphysical plane; the search for authentic expression was most famously and most radically carried out by Klages in his 1929 *magnum opus*, *Der Geist als Widersacher der Seele*.³⁸ Following the critiques of Bloch and Georg Lukács, Klages' *Der Geist als Widersacher der Seele* was received variously as a John the Baptist-like preparing-of-the-way for Hitler's messianic anti-rationalism, or alternatively, it was praised as a searing critique of the instrumentalist modern consciousness before even Heidegger engaged in it.³⁹ As Fellmann has pointed out, a

more nuanced view of Klages and his thought would be helpful.⁴⁰ Klages scholar Richard Hinton Thomas explains the thesis of the book:

If on the one view 'Geist' is an ennobling, liberating aspect of life, for Klages it is not part of life at all. It is a sort of space invader from another world, from 'outside life.' The emphasis is always on the destructiveness of 'Geist'. It is destructive of peace, of nature ... of organic bonds, of 'life'. It is 'Geist' that thinks up the instruments -- industrialization, technology and so on -- of what we deceptively call progress, and wherever the idea of progress has held sway, man in his arrogance has 'scattered the seeds of murder all around and the horror of death.'⁴¹

The critique of environmental degradation was closely associated with this anti-rationalist discourse, particularly among the relevant philosophers between the wars. As part of *Kulturkritik*, the biologists Johann Jakob, Baron von Uexküll and Raoul Francé; and the philosophers Oswald Spengler, Klages, Heidegger and Theodor Lessing wrote on this subject, and they affected the thinking of artists and critics such as Adolf Behne, Lazar El Lissitzky, Mies van der Rohe and Ernő Kállai.⁴²

As the literature on Spengler and his influential *Der Untergang des Abendlandes* is large, and his project well-known, I will here only point to the biologicistic, ecological and utopian organic nature of his critique of technology.⁴³ As Kluge phrases it, "Spengler's These vom Ende der Technik, seine Sensibilität für die Zerstörung äusserer Natur können nicht getrennt werden von seiner Perspektive zur Aufhebung dieses Zustandes, einer biologistischen Utopie: Die organobiologische Pflanzenmetaphor zur geschichtsphilosophischen Begründung des Zerfalls...."⁴⁴ *Welt* and its associated technology, science and death in Spengler's and *Geist* in Klages' discourses occupy positions structurally analogous to Heidegger's *Gestell* (enframing):⁴⁵

enframing does not simply endanger man in his relationship to himself and to everything that is. As a

destining, it banishes man into that kind of revealing that is an ordering. Where this ordering holds sway it drives out every other possibility of revealing. Above all, enframing conceals that revealing which, in the sense of *poiesis*, lets what presences come forth into appearance.⁴⁶

As we saw in the passage from his lecture given for the *Freideutsche Jugend* in 1913 above, Klages considered this danger and blamed materialism, industrialism and technology, in short, *modernity*. On this subject Francé wrote:

Die Menschheit, die sich schon heute dessen rühmt, die Atomzersprengung als Kraftquelle sich dienstbar machen zu können, wird nicht ruhen, bis diese Einsichten noch andere Früchte getragen haben, ausser den ideellen ... Denn unter dem Banner der materialistischen Idee sucht ja die Menschheit im Paradiesgarten der Natur nicht nach Erkenntnis der Gesetze, um danach ihr Leben reiner, vollendeter und harmonischer gestalten zu können, sondern ausschliesslich nach goldenen Früchten, die ihre Genusssucht befriedigen und ihr Herrschaft über die Natur verleihen.⁴⁷

As the *völkisch* environmentalist Gerhard Tenschert has pointed out, Francé is prophetic about the possible abuses of atomic technology, and he names materialism and the domination of nature as the dangers. Unlike Klages, Heidegger and Spengler, Francé did not oppose technology as long as its application did not upset the ecosystem it was part of.⁴⁸ In his many publications, rather than the dangers of technology *per se*, Francé emphasized the importance of natural and historical preservation in the *Heimat*, the home region -- a view which fed as easily into anarchist notions of cultural and economic autonomy and harmony, as it did into Walter Darré's *völkisch* ideology of *Blut und Boden*.⁴⁹ Bramwell has termed the intellectual and political movement towards ecological views of nature and its preservation since about 1880 "ecologism," a category whose relationship to the discussion is dealt with later in this chapter.⁵⁰

Klages, probably the most important philosopher of interwar biologicistic and nature-centric Neo-Romanticism (what I will define later in this chapter as *Biozentrik* or biocent-

rism), is, as Michael Grossheim wrote in 1994, "...weitgehend ein weisser Fleck auf der Landkarte der Philosophiegeschichte, ein Raum für mögliche Entdeckungen."⁵¹ Klages' philosophical writings are literary rather than precise, and dense without being as sophisticated as Heidegger's (a philosopher who, despite his relevance to our discussion, it is problematic to pin down as "biocentric"). These are reasons Klages' work has been marginalized to the extent that it has been, despite the fact that he is one of the few important 20th century philosophers to deal seriously with the environmental question as it is generally understood today. As Bramwell points out, "Klages' ... message ... was, perhaps, too extreme to influence the mainstream philosophers of his time... Klages' criticism is in fact the essence of today's 'green' and ecological cultural criticism, which also attacks what is seen as excessive rationality."⁵² Typical of the treatment accorded Klages is that of Harvard science historian Anne Harrington, who writes that "...we must [not] return to the point ... where any holistic science, or indeed any sort of challenge to the epistemological, existential, or moral self-sufficiency of traditional science, is branded 'irrationalist' or potentially 'fascist'" not a paragraph after she took the opinions of others at face value, and dismissed Klages as a "graphologist and pop-philosopher" of the "cranky Right."⁵³ Not only does Thomas discount the idea that Klages was a proto- or crypto-Nazi, he even opposes his inclusion in the so-called *konservativen Revolution* of interwar Germany which Harrington was presumably referring to.⁵⁴ Even taking into consideration the effect his thought *did* have on the National Socialists, and the -- according to Thomas -- "culturally" rather than racially-based anti-Semitic feelings Klages shared with many others of the age,⁵⁵ as Thomas points out, "[t]his is a far cry from the violent world of National Socialism, and we can better appreciate how it was, that what Klages excluded from his praise of Nietzsche [the Will to Power] was the side of him which the

Nazis most admired."⁵⁶ Indeed -- without whitewashing him of the degree of complicity he shared with anyone who was anti-democratic, anti-Semitic, and dealt with Nazi Germany -- it is important to keep in mind that not only did Klages (unlike Francé) always refuse to join the Party despite their efforts to recruit him, he actively opposed it, and he lived as a Pacifist in Switzerland throughout the Nazi era.⁵⁷

Rather than with the "conservative revolution" (of which Spengler was a part), Thomas places Klages into a position analogous to the biocentric Anarchist Gustav Landauer: "Comparisons between Klages and Landauer are thus easy enough... They do not make Klages into an anarchist. What they do suggest is that in any discussions of Klages, anarchism is at least a more useful point of reference than National Socialism...."⁵⁸ In fact Klages was a typical *Biozentriker* and the principal philosopher of anti-anthropocentrism after Nietzsche.⁵⁹ Confusion around his politics (and there is no doubt that he was both conservative and pessimistic) is typical of analyses of the biocentrically minded, a topic dealt with in more detail below. In any case, despite the shivers Francé's biologicistic racial essentialism; Spengler's and Klages' critical stance towards Democracy, their anti-Semitism and their admiration by the Nazis; and Heidegger's out-and-out Nazism, may send up our collective spines, one must keep in mind that neither Marxism, nor a supposedly "objective" "bourgeois" rationalist science, *in fact* dealt with the "looming environmental disaster" in this century. And despite the German National Socialists' and the biocentrics' mutual flirtation during the mid 1930s, neither did Fascism. It was biocentrism or "ecologism" that attempted to -- and is attempting to -- do so. In a time of increasing environmental consciousness therefore, this intellectual stream demands attention from art historians as much as it demands it from intellectual historians.

ii. Biologism: Raoul Heinrich Francé

Auf die Epoche physikalisch-chemischer Weltbetrachtung, die zum Materialismus führte, folgt jetzt naturgemäß die biologische Weltbetrachtung. (Behne 1916)⁶⁰

Das Zeitalter des biologischen Denkens ... hat erst begonnen. (Francé 1928)⁶¹

The constructive counterpart to *Kulturkritik* was biologism, a pervasive "popular Darwinian" *Weltanschauung* at the turn of the century which privileged biology among the sciences, applying its concepts and methodologies -- such as evolution and "the survival of the fittest" -- to other spheres of knowledge.⁶² Herbert Spencer saw "society itself as an organism and that therefore social progress was analogous to biological change."⁶³ The Thomas H. Huxley and Spencer-inspired "Social Darwinism," which attempted a biologicistic legitimation of capitalist competition, and Peter Kropotkin's Anarchism, which wished to justify altruistic social cooperation employing analogies from "nature," represented ideological poles of political scientific thinking based on biological observation which pervaded Western culture in the late 19th century.⁶⁴ Huxley's student, Kropotkin's friend, and Bergson's admirer, the Scottish biologist and urban theorist Patrick H. Geddes, saw the biological concept of evolution as applicable to all fields of knowledge: "Changing order, orderly change, and this everywhere -- in nature inorganic and organic, in individual and in social life -- for this vast conception, now everywhere diffusing, often expressed, rarely as yet applied, we need some general term -- and this is Evolution."⁶⁵ Geddes applied the principles of "mutual aid" to a "dynamic, holistic vitalist and unitary" conception of human settlement, influencing urban theorists and architects such as Lewis Mumford, Hugo Häring and Hannes Meyer.⁶⁶ In the Germanic cultural sphere, many major public intellectuals such as Schopenhauer, Nietzsche, Ernst Haeckel, Ernst Mach, Hans Driesch, and Sigmund Freud were representatives of biologicistic thinking.⁶⁷ Max

Nordau's theory of social degeneration, Paul de Lagarde's biologicistic-*völkisch* nationalist expansionism, Houston Stewart Chamberlain's racialism and Spengler's biologicistic morphological account of history, set the stage for the biologicistic aspect of National Socialist politics.⁶⁸ For reasons of economy (these figures are dealt with elsewhere) and because his writing is the least known and yet most important to interwar artistic culture, I will focus my attention on the work of Raoul Heinrich Francé.

Around 1920, Raoul Francé emerged as one of the most radically -- and perhaps naively -- biologicistic of public intellectuals in germanophone Central Europe. Trained as a botanist, engaged in pioneering research on soil ecology, largely self-educated in philosophy, and driven by an impulse to render science useful in everyday life, Francé developed a system of applied ethical thought extending to all spheres of human activity and understanding which he referred to as "*objektiv*," "*sachlich*," "*biozentrisch*," or simply as "*biologische Denken*."⁶⁹ While initially announced in 1920, he articulated his totalizing biologicistic program in 1928:

Das 'biologische Denken'... entspringt nicht einer Mode, einem Schlagwort, etwa vergleichbar dem von der Entwicklung ... vom Monismus ... das vor einem Menschenalter die Bildung und Kultur durchdrang und in Gärung versetzte. Denn es geht nicht wie jene von einer einzelnen Persönlichkeit aus, sondern durchsichert, nunmehr schon seit etwa einem Jahrzehnt die gesamte geistige Arbeit. Überall, in der Philosophie, in der Psychologie, in der Literaturwissenschaft, der Soziologie, in der Medizin, der Arbeitswissenschaft, der Physik, um nur einige der hervorstehenden Punkte zu nennen, wendet man sich biologischer Denkungsart zu, aus einer Art innerer Notwendigkeit, gewissermassen nach Erschöpfung der übrigen Möglichkeiten.... Das Zeitalter des biologischen Denkens ... hat erst begonnen.⁷⁰

Perhaps no other biologicistic intellectual was so bold in applying "biological thinking" to all spheres of human endeavor. While often naive, Francé's system was a complex and not unsophisticated one. Following Kant, Schopenhauer, and par-

ticularly Eduard von Hartmann's phenomenological line of reasoning, Francé held that an ontology is impossible, that "metaphysics is a biological issue."⁷¹ He was influenced in this connection by the positivist-Monist *Empiriocritizismus* of Richard Avenarius and Ernst Mach, who held that "Reality ... consists neither in 'minds' nor in 'atoms.' It consists in experiences -- in colors, sounds, tastes and other data of sensation."⁷² In other words, reality is constructed by us rather than it being something "out there" waiting for us to perceive it. As Spengler phrased it,

Nature is the shape in which the man of higher Culture synthesizes and interprets the immediate impressions of his senses. History is that from which his imagination seeks comprehension of the living existence of the world in relation to his own life, which he thereby invests with a deeper reality. Whether he is capable of creating these shapes, which of them it is that dominates his waking consciousness, is a primordial problem of all human existence.⁷³

Knowledge is only possible within the limits of our sensory organs, which therefore define a perceptual envelope Francé referred to as the *Zoesis*. Francé termed as "Bios" "the sum of all experiences," a kind of "nature-for-us" akin to von Uexküll's conception of *Umwelt* and to Heidegger's "Being-in-the-world."⁷⁴ These views led to Francé's acceptance of the psychologist O. Kohnstamm's "psycho-biological" position defined in 1903 that "das Wesentliche und Charakteristische aller Lebenserscheinungen auf elementare psychische Grundfunktionen zurückzuführen sei...", in other words, biology is psychologically determined.⁷⁵ By around 1907-08 "psychobiology" or "Neo-Lamarckism" had coagulated into what Adolf Wagner termed a "movement," one with its own journal.⁷⁶

Francé went beyond this empiriocritical stance, however, to a phenomenologically contradictory position when he accepted Gustav Fechner's and Haeckel's neo-Vitalist idea of an animating "soul" or "psyche" in living beings, his own version of which he developed in his work on "plant psychol-

ogy" parallel to Driesch's doctrine of the *Entelechie* between 1900 and 1905.⁷⁷ In 1912, Rudolf Eisler described this aspect of Francé's position as "psycho-vitalism," the belief that "Das Leben ist eine Äusserung psychischer Faktoren," rendering, for all intents and purposes, "psycho-vitalism" a synonym of "psychobiology."⁷⁸

In accepting the position that "life is an expression of psychic factors," Francé approached the radical psychovitalism of Ernst Marcus and Jacob von Uexküll, who saw reality as directly affected by the "perceiving" subject. Marcus saw light itself as a something which emanates from the subject rather than from (i.e. reflected by) the perceived object.

Es gibt kein an sich existierendes Licht, sondern in der Aussenwelt nur lichtlose *Ursachen*, welche das Gebilde des Lichts -- eine Materie der Empfindung -- in unserem Leibe auslösen. Nur die lichtlosen *Ursachen* der Lichtempfindung gehören der Aussenwelt an. ... Von diesen gänzlich *lichtlosen* Körpern [Selbst das Bild der leuchtenden Sonne am Himmel ist demnach ein Produkt unseres Gehirns] pflanzt sich eine gleichfalls *lichtlose* Bewegung, kleinster *lichtloser* Körperteile, die Undulationen des Aethers, fort. Sie fällt in das Auge ein, trifft die Netzhaut, versetzt hier die Sehnerven in eine noch unbekannt Modifikation, die zum Zentralorgan (dem Gehirn) fortgeleitet wird, und nunmehr erst gelangt mit einem Schlage gleich einer Explosion die Lichtempfindung ... [d. h.] das *Licht* zur Existenz als ein organisches Produkt, als Produkt des Zentralorgans.⁷⁹

Similarly, Walter Erben writes that von Uexküll

behauptet, dass der Mensch mit seinen Sinnen den Erscheinungen entgegenlebe und das nicht nur im bewussten oder träumerischen Reflektieren, sondern physisch, materiell. Sehen, Tasten, Hören stellen Explosionen von Materie dar, die das angeschaute, gehörte, begriffene Objekt durchdringen, Zeugungen, die das 'Andere' besamen, so dass es zu einem Produkt des Ichs wird.⁸⁰

Inspired by his own pioneering work on soil *Biozönose* -- what he referred to as *Edaphon* -- Francé constituted the *Bios* as a holistic system: "Es liegt also in Wesen des Biologischen, dass jedes Erlebnis und die Summe aller Erlebnisse: der

Bios, als ein Ganzheitskomplex erscheint, der aus Teilen besteht, die einander irgendwie zugeordnet sind."⁸¹ Francé identified such eco-systems at all scales from single-celled creatures upwards. As a result he developed a prescient "systems" view of the world, seeing it as a kind of nested hierarchy of integrated ecosystems, what he referred to as a series of *Integrationsstufen*:

Die Welt als ganzes ist ein Gleichgewichtssystem, das durch Kreisläufe in zahllosen Prozessen seinen Ausgleich und damit seine Dauer findet. Zur Dauer führt nur dieser harmonische Ausgleich, den auch das Leben in Entwicklungen und Funktionen anstrebt, aber nur unvollkommen verwirklichen kann. Je mehr sich ein Vorgang dem harmonischen Zustand nähert, desto weniger Reibung am Weltganzen erfährt er, desto mehr nähert er sich auch dem bestmöglichen Zustand (Optimum).³²

Added up, these *Integrationsstufen* in equilibrium were equivalent to Swedenborg's "...überwältigenden Gedanken, dass die Welt eine grosse Einheit sei."⁸³ Lessing expressed the idea poetically:

Betrachten wir die Erde als lebenden und sterbenden Organismus, ... so untersteht auch dieser Organismus, gleich wie der kleinweltliche des Menschen: dem auszugleichenden Spannungszustande eines immerwährenden Stoffwechsels. Im zyklischen Rhythmus scheinen Gewässer und Festlande, Winde und Schollen, ja Erde und fremde Gestirne an einander gebunden zu sein. Ein Gesetz des Gleichgewichts wägt das Werden oben auf den Gebirgen und das Wachstum unten in Tiefen der See wie auf einer unsichtbaren Waage.⁸⁴

As in the case of Lessing, Francé's systems-based method of holistic thinking convinced him of a basic "Harmonie in der Natur."⁸⁵ As a result of having seen the suffering caused by the First World War and its aftermath in Germany, around 1919 Francé began to see this equilibrium in natural ecosystems not only as a descriptive model, but also as a normative principle for humans, who seemed not to be maintaining their ecosystems in equilibrium of late. Francé fell into the trap of applying organic descriptive models of "natural" ecosystems as normative prescriptions for social systems without addressing the

conundrum that if all human behaviour is "natural," then there is no "unnatural" position to avoid. "Es gibt nur ein Mittel," he wrote in 1920, "sich von den Leiden möglich fern zu halten, und das ist: die Gesetze der Welt, in der wir leben, kennen zu lernen um sich auch im Einklang mit ihnen verhalten zu können!"⁸⁶ In this respect his thinking is related to the holistic ideas of contemporary Gestalt Psychology, whose founder, Wolfgang Köhler's key concept was also equilibrium.⁸⁷

The study of the *Gleichgewichtssystem* is what Francé introduced in 1920 at the meeting of the Schopenhauer Society in Dresden as *biozentrische Erkenntnislehre* (biocentric epistemology), the basis for his "objective" or "biocentric" philosophy and his publishing program.⁸⁸ In his 1923 epistemological manifesto *Die Welt als Erleben*, Francé builds on this foundation a totalizing biologistic program of both knowledge and behaviour:

Unser Ausgangspunkt war, aus der ersten Erkenntnis der biologisch bedingten Unmöglichkeit absoluter Erkenntnis zu der Quelle der Einsichten vorzubringen. Die ... Notwendigkeit zwang uns, daraus eine *biozentrische Erkenntnislehre* abzuleiten. Die notwendige Folge dieser muss die Begründung einer ... *biologischen Logik* sein. Durch eine solche entsteht eine andere *Rangordnung der Wissenschaften* wie die jetzt gültige. Ihre Konsequenz ist wieder eine *biologische Ethik* im moralischen Handeln, eine *Biotechnik* im praktischen Schaffen und eine *biologische Ästhetik* ... auf dem Gebiet des reinen Schaffens. Eine neue Einsichtswelt entsteht, die zu einer neuen Lebensordnung und Schöpfung einer Kultur einladet. Drei grösse Lehren gründen sich darauf: eine *Ordnungslehre des Wissens (Biotik)*, eine *Verhaltenslehre des praktischen Lebens (Telotik)* und eine alles zusammenfassende *Kulturlehre (Harmonik)*, die in der höchsten religiösen Vorstellung gipfelt.⁸⁹

Francé's biologism, his reading of Einstein's theory of relativity and of Nietzsche, resulted in an ethical relativism which transposed questions of fact to those of ends:⁹⁰

Die erste Konsequenz der Biozentrik ist die Auffassung dass die Rolle des Verstandes keine logische, sondern ein biotische ist. Es sei noch einmal daran erinnert, wie die Objektive Philosophie die Frage

'wozu denken wir?' beantwortet. Wir fanden dass das Denken -- und mithin der Verstand -- nicht um seiner selbst willen da sei, sondern als Hilfsmittel zur Orientierung in der Umwelt.... Dies ist die zweite Konsequenz der Biozentrik: Alles mögliche Erkennen ist relativ.⁹¹

Since all perception is relative, "Ethik, Soziologie und Ästhetik sind dann gleichfalls biologisch bedingt und müssen sich relativistisch orientieren."⁹² The value of anything and everything is to be determined by its utility in maintaining or achieving harmony in any given *Biozönose*; in the case of humans, the nested hierarchy of ecosystems we inhabit: our families, our *Heimat* (in Francé's conception a forerunner of Kirkpatrick Sale's "bioregion" concept), our nations, and the earth as a whole.⁹³ As Francé wrote in a passage Mies van der Rohe marked in his copy:

Heimat: die Umwelt, an die ich Kraft meiner Herkunft und meiner Gewöhnung angepasst bin. Die Menschen nennen meine Heimat meist missverständlich ihr Vaterland.

Natur: der Inbegriff meiner Zoesis.

Glück: das Gefühl meiner Harmonie mit meiner Biozönose.

Zivilisation: die Umbildung der heimatlichen Biozönose in optimale Gebrauchsformen als Künstliche Biozönose.

Kultur: die Harmonie der Künstlichen Biozönose mit dem Erlebnisganzen.⁹⁴

This applied, practical version of biocentric epistemology, Francé termed *Lebenslehre*.⁹⁵ Francé laid this program out in his *Hauptwerk*, the two-volume *Bios: Die Gesetze der Welt* of 1920-21, and developed it during the first half of the decade in an ambitious series of volumes he characterized as the *Grundlagen einer objektiven Philosophie*.⁹⁶ This was probably the most comprehensive biologicistic epistemological and normative system available at the time.

Though totalizing, it was by no means clear to a reader of the early twenties that Francé's orientation was "capitalist" rather than "socialist." Just as with the National Socialists, there were corporatist, indeed communitarian and coop-

erative elements in his social thought. Though Francé recognized Spencer as a forerunner of his own *biozönotischer Soziologie*,⁹⁷ his emphasis on harmony over competition and on altruism in nature and human society, positioned Francé nearer to Kropotkin's biologicistic anarchist social theory of "mutual aid" than to Social Darwinism, which tended to legitimize capitalist competition in the marketplace. He also resembled Kropotkin in that despite his romanticization of "nature," he saw a potentially positive role for technology in society.⁹⁸ However, as a consequence of his emphasis on the desirability of "equilibrium" in ecosystems, Francé also took the position -- like Spengler -- that revolutions were undesirable because they brought about change too quickly, upsetting social balance.⁹⁹ This conservatism -- in contrast to the belief in both the possibility and desirability of revolutionary change characteristic of biocentric anarchists such as Kropotkin, Landauer and Raoul Hausmann -- ultimately positioned Francé as a social reactionary from both the Marxist and Anarchist points of view.

Inasmuch as his thinking accorded with that of Kropotkin, Francé was related to Klages, who, as we have seen, has been compared to Landauer. However, unlike Klages and Spengler, Francé was no *Kulturpessimist* with respect to technology; he was not against technology per se.¹⁰⁰ For Francé, "das Weltgesetz erzwingt es, dass zuletzt die Technik des Organischen und die des Menschen identisch sind."¹⁰¹ Just like non-human technology, our technology is built up of combinations of seven basic forms or *Grundformen*.¹⁰² If human technology is a subset of organic ("natural") technology, then it is not something foreign to or necessarily destructive of our ecosystems. Just as we stand to profit from observing the workings of *Biozönose* in nature, we stand to benefit from our observation of naturally-occurring technologies. Technologies of all kinds, including non-human ones, and our ability to learn from them, Francé termed *Biotechnik*, a predecessor of today's

"bionics" or "biotechnology."¹⁰³ Indeed Francé supported himself in part from patents he took out on technologies adapted from "nature."

As is to be expected, Francé did not hold back from pronouncing on cultural and aesthetic issues. He denied the existence of a cultural space autonomous from the "natural," and therefore of a cultural history independent of natural history. In his copy of Francé's *Die Kultur von Morgen*, Mies marked the following passage:

Keine Kulturgeschichte, noch weniger ein Kulturverständnis ist mehr denkbar, ohne eine Naturgeschichte und ohne Naturwissen, für immer ist Kulturwissenschaft gebunden an naturwissende Köpfe, und wenn noch einer daran geht mit bloss historisch oder philologisch geschulten Fingern, dem muss man die Eignung und Vorbildung dazu absprechen.¹⁰⁴

Thus, applied arts (*Kunstgewerbe*) he saw as a subset of *Biotechnik* pure and simple.¹⁰⁵ Francé's disciple Huberta von Bronsart proposed an "objective" or "biocentric" aesthetics in which "der Kunst [die] Bestrebung [ist], das Sein zu verklären." Quoting Francé she writes "'Kunst ist nur dann Notwendigkeit, wenn die Kunstwerke Abbilder der Weltgesetzlichkeit sind.'"¹⁰⁶ She read Francé as promoting an expanded, functionalist conception of art which includes "jede Schöpfung die eine Verklärung der Biozönose darstellt; eine organisatorische Leistung, eine Philosophie, eine Religion kann ein Kunstwerk sein."¹⁰⁷ Despite the quality of his own scientific illustrations, which served to illustrate his ecosystems view of the world, Francé's biologicistic views of art were grounded in an essentially conservative aesthetic sensibility on the one hand, and on that organicist aesthetic obsession which privileged Golden Section proportions as the only ones to be employed in cultural production, on the other.¹⁰⁸

While Raoul Hausmann was sharply critical of the (in a political sense) reactionary position expressed in *Die Kultur von Morgen*, i.e. of Francé's opposition to willed change in any given ecosystem, and to its totalizing, indeed totalitar-

ian implications,¹⁰⁹ the apparent scientific authority, the practicality and the collective, cooperative, i.e. *gemeinschaftlich* implications of Francé's program appealed to Leftist cultural practitioners during the twenties who were in reaction to the speculative, occult, messianic and individualistic tone of the "Expressionism" they emerged from, and were unsettled by the economic, social, cultural and ideological chaos of post-war Germany.¹¹⁰ Indeed, at the historical moment, i.e. around 1923-24, when hope for a world revolution was fading among leftist intellectuals, Francé's "objective," that is, *sachlich* vision of practicality and order in nature, could fill a gap for some people, even if his position was, from a Marxist position, essentially reactionary.¹¹¹ Also, just as the Monism of Haeckel and Wilhelm Ostwald was seen by pre-war intellectuals as bridging science and religion, Francé's neo-Monist system fulfilled the desire for a scientifically-based quasi-religious *Weltanschauung* after the war, becoming the post-war equivalent to what Bloch referred to as fin-de-siècle *Hurrapantheismus*.¹¹² But members of the Weimar-German avant-garde were also attracted to Francé's legitimization of human technology as "natural."¹¹³ Indeed it was Francé's framing of human technology as part and parcel of technology in nature, i.e. as *Biotechnik* -- and certainly not his naive biologicistic aesthetics -- which was interesting to the Weimar German avant-garde.¹¹⁴ For artists such as the International Constructivists of Weimar Germany, Francé's popphilosophy provided easy answers apparently rooted in the apodicticality of "nature" to vexing questions, and his *Grundformen* potentially legitimated the artists' arbitrary "elementary" or "abstract" styles of artistic and architectural production, be they curvilinear (biomorphic), orthogonal (geometric) Modernist and/or informed by a "machine aesthetic." In 1923 Francé declared that "the biocentric way of thinking appears now not merely as a possible, but as the only possible way to order experience (... i.e. nature), to make it

useful to us and the other parts of the ecosystem we inhabit, in short, as the only possible way to live."¹¹⁵ In making this statement Francé was echoing the psychiatrist and art patron Heinrich Stadelmann, who in 1916 wrote that "The great achievement of our era is *biological thinking*, which has revolutionized science and art." While Francé would have agreed with Stadelmann so far, it is ironic that Francé, no friend of the Expressionist avant-garde, would have also had to read the statement that "Expressionist art aims at inner truth and away from the external world; it is biological thinking that has taught us that 'the invisible inner element produces visible form.'"¹¹⁶ While, as Raoul Hausmann pointed out, Francé's biologism is disquieting in its totalitarian implications -- and Hausmann's intuition was borne out -- it is central given his authority among players in the Bioromantic discourse.

2. From Nature-Centric Neo-Romanticism to Biocentrism

We have encountered terms -- Monism, Neo-Vitalism, *Lebensphilosophie*, *Vitalmystik*, Psychovitalism, Psychobiology, Neo-Lamarckism, biologism -- which refer to a related set of both philosophical and scientific categories. This relation was noted by contemporaries such as Kurt Graeser, who writing as a Monist in 1908, noted "d[ie] biologische[n] Gesamtaufassung, welche jetzt als 'Neo-Lamarckismus' oder 'Neo-Vitalismus' bezeichnet wird"¹¹⁷ and by Wagner, who that same year equated the Psychobiological and Neo-Lamarckian "movements."¹¹⁸ Eisner described Francé as "evolutionistischer Monist, Panpsychist, Pantheist..." and a believer in both "Psychovitalism" and Neo-Lamarckism, and we have seen how, from a critical position, Bloch linked Haeckel, Nietzsche, Klages, Bölsche and Neopanteism.¹¹⁹ In fact, these subcomponents of Neo-Romanticism and the "Neue Naturphilosophie" interconnected and intersected in ways so complex, as to make

it impossible to disentangle them from each other, much less to disentangle the philosophical categories from the scientific ones. While this is the case, it is necessary to consider the relations between the categories as they are employed in the literature in order to enable the contextualization of the players. While the differences between the categories are important to keep in mind, I will attempt to elucidate those nature-centric aspects of the components which are amenable to combination in a single construct of biocentrism.

a. *Lebensphilosophie*

Und wieder klammerte sich die Welt der Gelehrsamkeit an ein Wort. Dieses Mal war es das Wort: Leben. Leben wurde Modewort. (Lessing 1924)¹²⁰

The primarily philosophical component of nature-centric Neo-Romanticism was the biologicistic wing of *Lebensphilosophie*, a philosophical variety which, based on the results of *Naturphilosophie* and of 19th century science (especially biology), attempted to rethink philosophical categories such as "life" and "nature," as well as epistemology, ethics and morality. In his history of German philosophy in the modern period Herbert Schnädelbach reminds us of the general import of the concept of "life" in modernity, of its role in the anti-modernist cultural critique which suffused the *fin-de-siècle*, but also of the fact that, as in the case of Wilhelm Dilthey, not all Life Philosophy was biologicistic:¹²¹

It is important that the term 'life' in this connection does not refer primarily to anything biological. In fact, 'life' is a concept ... which ... led the attack on ... a civilization which had become intellectualistic and antilife, against a culture which was shackled by convention and hostile to life, and for a new sense of life ... in general for what was 'authentic', for dynamism, creativity, immediacy, youth. 'Life' was the slogan of the youth-movement, of the *Jugendstil*, neo-Romanticism, educational reform and the biological and dynamic reform of life. The difference between what was dead and what was living came to be the criterion of cultural criticism, and everything traditional was

summoned before the 'tribunal of life' and examined to see whether it represented authentic life, whether it 'served life', in Nietzsche's words, or inhibited and opposed it.¹²²

Despite its wider implications it seems to me that the *Lebensphilosophisch* obsession with "life" derived from an amalgam of the biologicistic and *Naturphilosophisch* viewpoints. As Bramwell formulates it "[l]ife-philosophy was a response to the revolutionary idea that man and world and nature were one ... and the resulting implication that man's intellect was not autonomous."¹²³

As is apparent from the quotes, paraphrases and references to his writings in the passages quoted at the start of this chapter, the most suggestive, influential representative of this philosophical position was Friedrich Nietzsche. Neither on the Left nor the Right, more than any other philosopher, Nietzsche's biologically-based system of ideas decentered the human species and inspired a rethinking of traditional Judaeo-Christian morality and ethics.¹²⁴ A *Lebensphilosoph* such as "Nietzsche implicitly places the affirmation of life at the center of man's being."¹²⁵ Besides Nietzsche; Schopenhauer, Eduard von Hartmann, Bergson, Hermann Keyserling, the later Georg Simmel, Lessing, Spengler, Klages, Dilthey, Eduard Spranger, and the "Pragmatists" William James and John Dewey, were all counted as *Lebensphilosophen*.¹²⁶

b. Neo-Vitalism

[In 1898] Ich hatte entdeckt, dass es ausser der beschriebenen Lebensforschung auch eine denkende Art von Naturwissenschaft gibt. Neue Namen: Fr. Dreyer, H. Driesch ... W. Ostwald, J. Reinke, hatten eine neue Art von Naturbetrachtung begründet und unter der Oberfläche der seelen- und geistlosen Kunst der morphologischen Beschreibung, des systematischen Ordners, der Nomenklaturstreitigkeiten, des Präparierens und der Mikrotechnik, bereitete sich eine neue *Naturphilosophie* vor, von der ich fühlte, dass sie die Grundlagen eines neuen Lebensverständnisses und damit auch einer neuen Lebensführung des Menschengeschlechtes abgeben könne. Der Vitalismus begann

damals zu keimen; die Überwindung des Materialismus war sein Ziel. Die neue Naturphilosophie, die dann überwuchernd und ihr Ziel so verlierend, wie in der ersten nachkantischen Periode des Naturdenkens, sich in die okkultistischen Spekulationen verlief, welche die Gegenwart unfruchtbar machen, schlug mich zunächst in ihren Bann. (Francé 1927)¹²⁷

At its height, *Lebensphilosophie* intertwined with Neo-Vitalism,¹²⁸ and the Monism of the *Monistenbund*, both of which -- though rooted in contemporary science and promoted by scientists -- focused on philosophical issues. "Vitalism" has been defined in opposition to "Mechanism" as "a miscellany of beliefs united by the contention that living processes are not to be explained in terms of the material composition and physico-chemical performances of living bodies."¹²⁹ Vitalism is characterized by "the belief that forces, properties, powers or 'principles' which are neither physical nor chemical are at work in, or are possessed by living organisms, and ... any explanation of the distinctive features of living organisms which did not make references to such properties, forces, powers or principles [such as Mechanism] would be incomplete."¹³⁰ Continued in various forms from the time of Aristotle through Spinoza to the present, Vitalism -- like Occultism -- reemerged in the late 19th century as a reaction to, or an attempt to mitigate what were seen to be the excesses of Materialism, Mechanism and Positivism. As Wagner put it: "Proklamierung einer exakten nichtmechanistischen Naturforschung -- der Neovitalismus stellt einen nicht mehr ignorierbaren Gegner ... der mechanistischen Weltanschauung dar."¹³¹ Around the turn of the century a new, more sophisticated kind of Vitalism developed, what has been termed "Neo-Vitalism" and what Mikhail Bakhtin and others since him have referred to as "Critical Vitalism."¹³² Philosophers usually classified as Neo- or Critical Vitalist (though they are sometimes termed *Lebensphilosophen*) include Nietzsche, Henri Bergson, Hans Driesch, Klages, and Johannes Reinke.¹³³ Wolfgang Krabbe sees Vitalism as having been the "conventional ideol-

ogy" of the *Lebensreform* movement.¹³⁴ In the Introduction to their anthology on Neo-Vitalism Burwick and Douglass discuss the emergence of this philosophy:

Gilbert Ryle scorned [Vitalism].... Still, 'critical vitalism' ... has deserved more careful assessment than Ryle allows. This vitalism emerged in the nineteenth century transition from matter-based physics to an energy-based physics; it was an emergence noted by artists, philosophers, and scientists alike, which began early in the century.... Whereas naive vitalism had posited a substance (*archeus*, vital fluid) in order to fit the evidence of a materialist ontology, critical vitalism focused on process and dynamic impulse in the context of an ontology of energy and idea. German *Naturphilosophie* was joined by the critical vitalisms of Bergson and Driesch, and the aesthetic and social vitalism of Nietzsche. There can be no doubt that, as the century closed, the vitalist tradition was being powerfully reinterpreted by some of the most celebrated intellectuals in the West.¹³⁵

While I can only touch on this topic -- which awaits fuller treatment in that history of Neo-Vitalism urgently in need of being written¹³⁶ -- the possible Vitalist solutions to the Mechanist-Vitalist debate were diverse. They included Driesch's revival of the Aristotelian *Entelechie* based on his observations of the regenerative capabilities of dissected sea-urchin blastomeres; von Uexküll's related *Gen*, which he felt harmonised with *Entelechie*; Francé's "psychovitalistic" and biologicistic amalgam of a pervasive life-substance, a kind of superorganism he termed *Plasma*; the more poetic and speculative Bergsonian *élan vital* and Klagesian *kosmogoner Eros*; the quasi-metaphysical Haeckelian "Seele;" and the physics-based Ostwaldian *Energetik*.¹³⁷ As we have seen, the more Pantheistic of these systems, those characterized by what he termed the *kosmovitale Einsfühlung*, Max Scheler labeled *Vitalmystik*. As Jain writes:

In Notizen aus dem Nachlass stellt Scheler, wohl angeregt durch Nietzsches Unterscheidung zwischen dem Apollonischen und dem Dionysischen, zwei Idealtypen von Mystik einander gegenüber: die "Ideenmystik" und die "Vitalmystik". Scheler charakterisiert

sie als "die (helle) Mystik der *Ideenschau* und die (dunkle) Mystik des *Einsgefühls* mit den "mütterlichen" Urkraft des *Lebens* und der "Mutter Erde", dem allem Werden, Keimen, Wachsen, Zeugen zugrunde liegenden bild- und ideen-freien *Drange*.¹³⁸

Scheler saw as "ein zweifelloser Fortschritt" Bergson's and Driesch's concept of the unity of organic life over what he termed the "alten Monismus" of Hegel, Schopenhauer, Schelling and von Hartmann.¹³⁹

There was no coherent Neo-Vitalist ontology or epistemology, and there is little agreement about the varieties of Neo-Vitalism or the distinctions between Neo-Vitalism, Organicism, Holism, mysticism and even mechanism.¹⁴⁰ There was certainly no self-aware "Neo-Vitalist" group and Driesch was one of few philosophers designated as "Neo-Vitalist" to embrace the term.¹⁴¹

c. The *Monistenbund*

More coherent as a social grouping, equally diverse intellectually speaking, and based on contemporary scientific research just as Driesch's thinking, was early 20th century Germanic "Monism." In general, Monism is defined as "a metaphysical system based on the assumption of a single ultimate principle or kind of being instead of two or more; [one which is] opposed to dualism and pluralism..."¹⁴² This definition begs the question of what that single ultimate principle is, and suggests the multiplicity of possible Monisms. "Monism" was introduced in its current sense as opposed to "Dualism" in the early 19th century and was adopted by German biologist and Darwin popularizer Ernst Haeckel, Francé's boyhood hero and Driesch's professor and early mentor.¹⁴³

Haeckel's usage of "Monism" beginning in 1863 marked a decided shift in the nature of the debate around Monism and Dualism.¹⁴⁴ Rather than operating within the discourse of metaphysics, as the Monist-Dualist debate had done previously, Haeckel removed it to that of natural science. He was "con-

vinced of the essential unity of organic and inorganic nature, and argued that the simplest protoplasmic substances arose from inorganic carbonates through spontaneous generation... [rather than] a miraculous origin...."¹⁴⁵ His "confidence that 'consciousness, thought and speculation' are 'functions of the ganglionic cells of the cortex of the brain,' his 'hard' determinism, his mechanism, his complete rejection of the supernatural, and his enthusiasm for science, all inclined his contemporaries to classify him as a materialist."¹⁴⁶ With what Bloch cleverly calls "sonnige Banalität," he wished to reduce the "riddles of the universe," as he termed scientific unknowns, to one "riddle," that of the nature of substance, and he claimed that his Monism did this. He saw Darwin's theory of natural selection as a materialist mechanism to explain organic life, its origins and its changes. In 1868 he wrote that "Evolution is now the magic word with which we will solve all of the riddles around us, or at least be on the way to solving them."¹⁴⁷ Haeckel defined Monism simply as "that unifying conception of nature as a whole."¹⁴⁸

While this position seems materialist and mechanist -- and Haeckel certainly appeared as such to Christians and other idealists (whom he attacked mercilessly throughout his career), as Bloch points out, there was an ambivalence in Haeckel's own thinking from the start, a substrate of pantheistic vitalism rooted in German Nature Romanticism, a quasi-animist belief that "both matter and ether possess sensation and will in the lowest grade."¹⁴⁹ For much of his career, Haeckel's ontology pendulated like some gestalt figure with two possible sense-configurations between a materialist Monism and this other, Vitalist kind of Monism, what we have seen Bloch refer to as a "pantheistelnd gemachte Mechanik," before becoming lodged permanently in the configuration which signified "Vitalist" towards the end of his career. While

his Monism seemed to assert that everything was unified because everything was matter ... in his

Riddle of the Universe, where he summarized his ideas, Haeckel vehemently denied that he was a materialist because his system, unlike materialism, did not see matter as dead. Rather, Haeckel placed himself in what he thought was the tradition of Spinoza and Goethe. These thinkers, he believed, saw nature as a single universal substance that was both matter and spirit -- a universe of animated matter.¹⁵⁰

Given such a multifaceted position, Haeckel's views were received in different ways during his long career. "Haeckel clashed with clericals and scientific colleagues, political figures and philosophers. Like a many-sided geometrical figure, Haeckel -- zoologist, popularizer of Darwinism, and polemicist for his own Monism -- excited varying images in the minds of rivals and admirers."¹⁵¹ While this was the way he was seen, during most of his career Haeckel in effect sought a mediate position; he was anxious to differentiate his Monism from both materialistic and idealistic monisms. According to Gienapp, Haeckel's "Monism was neither the elaboration of a new atheistic materialism based on Darwinian evolution nor the unfounded fanciful speculation of a nature philosopher," both accusations commonly levelled at him. "Rather it was a romantically based view of nature in which the materialistic tendencies inherent in this point of view were fully elaborated."¹⁵² As with Francé later on, the mediate location of Haeckel's Monism between the reductive materialism of positivist scientific thinking, and of idealist religious or esoteric systems of thought, was what made it so appealing to those artists who sought such a position themselves; a synthesis of hard science and metaphysics.¹⁵³ In this context one can fully understand Kandinsky's statements such as "The world sounds. It is a cosmos of spiritually affective beings. Thus, dead matter is living spirit."¹⁵⁴

This drive to mediate and synthesize was also reflected in Haeckel's project to seek beauty in nature -- particularly at the microscopic level of his own research -- as an ethical, or normative value. As Hardy notes, he "was especially inter-

ested in art forms in nature and believed that the microscope had newly aroused our aesthetic sense."¹⁵⁵ Both Haeckel's position between materialism and idealism, and his publication around the turn of the century of some of his most stunning scientific illustrations as *Kunstformen der Natur* -- an album intended as a pattern book for artisans -- account for his later influence on artists operating within the Bioromantic cultural pattern.

His popular Monist manifesto, *Die Welträtsel* appeared in 1899, and became a world-wide bestseller, read by many of the generation who were growing up around the turn of the century.¹⁵⁶ Strongly evident in *Die Welträtsel*, Haeckel's ambivalence tilted increasingly towards the vitalist, indeed *vitalmystisch* (or rather *Hurrapantheistisch*) end of the spectrum during his career and by 1904 he had drawn up plans to transform Monism into a scientifically-based, in effect Neo-Vitalistic, "Monistic Religion" as an alternative to the traditional religions.¹⁵⁷ In his thirty "theses of Monism" of 1904, Haeckel planned a *Monistenbund* [Monist League] as the basis for a "potential 'compromise' church, as the 'link' between science and religion" based on the precepts of early Christianity, the philosophy of Spinoza, and the writings of Goethe.¹⁵⁸ Paul Weindling has written of this:

Nature was venerated as a healing and restorative force; organic doctrines were used to promote ideals of a cohesive and unified society. By the 1890s Darwinian organicism, which was originally allied with anticlerical political liberalism, had been successfully deployed in support of quite different cultural values ... given expression ... in the Monist League ... that believed in the virtue of nature itself to improve the quality of human life. By viewing Darwinism as a "secular religion", features of German culture can be brought to light that have previously been overlooked because it has been assumed that *Darwinismus* represented merely an increasingly mechanistic analysis of nature.¹⁵⁹

The *Monistenbund* was founded in 1906 by Haeckel, Ostwald and Mach to promote the development of such a "religion,"

though it has also been seen to be a typical organization of the *Reformbewegung*.¹⁶⁰ Raoul Francé and the scientific writer and novelist Wilhelm Bölsche were also founding members of the Monistenbund, Bölsche propounding a view of the sex drive ("love") as the vital force.¹⁶¹ In 1911 Ostwald -- by then a Nobel Prize winner -- assumed the presidency of the *Monistenbund*, which he held until 1915.¹⁶² Ostwald's Monism was based on his "Energetism,"¹⁶³ the idea that "energy is the substrate of all phenomena and ... [A]ll observable changes can be interpreted as transformations of one kind of energy."¹⁶⁴ As Holt has pointed out, "Ostwald... regarded his Energism (sic) as the ultimate monism, a unitary 'science of science' which would bridge not only physics and chemistry, but the physical and biological sciences as well."¹⁶⁵ Ostwald's Energetism offered a more scientific nomenclature than Haeckel's emphasis on the naturally-occurring "soul" as the animating force,¹⁶⁶ a factor which may account for Ostwald's greater influence on the general public, including artists, by the early 20th century.¹⁶⁷ Mach, meanwhile, took a radically biologicistic, or in Pauline Mazumdar's terms, a "biological positivist" approach to Monism. For Mach, only a biological phenomenology was possible, a knowledge based on the *Vorstellung* of sense impressions.¹⁶⁸ In fact, as pointed out by John T. Blackmore, Mach's relations with the other Monists were essentially negative. He joined or allied with the other Monists and with Driesch because they were anti-mechanist, rather than because he accepted their "positive" solutions to epistemological and ontological problems.¹⁶⁹ His and Richard Avenarius' position was in fact the one which gained more adherents in the interwar period. This tension was later reproduced at the Hannes Meyer Bauhaus in 1929, when members of the "Verein Ernst Mach" -- the "Logical Positivists" -- lectured there after *Biozentriker* such as Hans Prinzhorn had done so.

It was on the question of materialism, that von Uexküll

and Driesch -- who labelled Monism "disguised Materialism," and the members of the *Monistenbund*, clashed.¹⁷⁰ In addition to its materialism, von Uexküll attacked Monism for its "Darwinism" and its religious aspirations, writing that "Zu dieser Allerweltswahrheiten gehört heutzutage der Darwinismus, der als Monismus zu einer Art Religion der Halbbildung geworden ist.... Das Volk glaubt ... an Haeckels 'Welträtsel', wie es früher an den Katechismus glaubte."¹⁷¹ But despite these disagreements, Haeckel's status as both the spiritual father of the Monist League and as an important Neo-Vitalist late in his life, and the *au fonds* Vitalist nature of both Ostwald's "Energetist Monism" and Francé's *Plasmantik*, demonstrate the extent to which Neo-Vitalism and Monism were interlinked, indeed disentangleable, even if Mach's positivistic Monism was also present.¹⁷²

Returning to the question of the relationship between Neo-Vitalism and the philosophy of life, Fellmann writes of the determinant role Neo-Vitalism played in the development of *Lebensphilosophie*: "Es kann kein Zweifel daran bestehen, dass der neovitalistische Evolutionismus die Denkform mitgeprägt hat, an der sich der lebensphilosophische Lebensbegriff orientierten konnte."¹⁷³ Some historians, such as Anna Bramwell, simply assume the identity of Neo-Vitalism (including *Monismus*) and *Lebensphilosophie*.¹⁷⁴ Philosophers such as Bergson, Klages, Dilthey and Simmel are alternately listed as being *Lebensphilosophen* and neo-Vitalists. *Lebensphilosophie*, Neo-Vitalism and the *Monistenbund* were so closely linked, as to be parts of a single philosophical current.

d. The New Biology: Neo-Lamarckism, Organicism, Holism

Die neue Biologie versteht unter Urform "nicht mehr einen für die 'Entwicklung' im Darwinischen Sinn stammesgeschichtlich neutralen Anfangspunkt, sondern die in allen zu einem Typus 'gehörigen Arten und Gattungen, auch in den anfänglichsten schon vollständig vorhandene typenhaft konstitutionelle Gebundenheit und Bestimmtheit, die Potenz (man denke an

die Bemühungen von Hans Arp organische Lebensformen in letzter, konzentriertester Potenz zu Bildern und Plastiken zu verarbeiten) "die bei allem ausserem evolutionistischem Formenwechsel als das Lebendig-Beständige da ist -- eine Entelechie wie auch Goethe wohl den Begriff Urform fasste..." (Kállai quoting Dacqué, 1932)¹⁷⁵

Organicism: 1. any theory that explains the universe on the basis of an analogy to a living organism. 2. any theory that explains the universe as the function of a whole causing and coordinating the activities of the parts. Compare with Animism, Holism, Vitalism. Opposed to Mechanism.¹⁷⁶

Holism: The theory that there is a real, fundamental, and irreducible difference between living and nonliving, between organic and inorganic activity. The parts of living (organic) wholes function differently within the whole from the way they do outside it. Organic wholes must be studied as wholes...¹⁷⁷

The second component of turn-of-the-century nature-centric Neo-Romanticism, that of the "New Biology," is equally complex. Science historians have written of the *bona fide* "neo-idealist" scientific perspectives mainly within the field of biology such as Neo-Lamarckism, Organicism and Holism, which were to varying degrees in revolt against the prevailing reductivist-mechanistic, instrumental, and positivistic scientific practices of the time.¹⁷⁸ Paul Weindling writes that during this *fin-de-siècle* "Theology ... had been shaken by historical scholarship. Biology, however, promised to extend the idea of social progress to the history of life.... A vast new market ... had emerged for Haeckel's organicist synthesis."¹⁷⁹

As we have seen, Haeckel was a complex figure whose work was received multiplicatively: arch-materialist and arch-mechanist as well as arch-idealist, arch-vitalist, even arch-mystic. While his philosophical orientation was grounded in German *Naturromantik*, from Darwin Haeckel adopted the rejection of a teleological understanding of evolution, seeing instead -- in a decidedly proto-Bergsonian manner -- "the

world as an eternal evolution of substance, and man as part of that evolution."¹⁸⁰ However since he believed in the inheritability of acquired characteristics, Haeckel was also Lamarckian. In fact Haeckel and Herbert Spencer were crucial to the rise of a Neo-Lamarckian reaction to the theory of natural selection which happened simultaneously with the popularization of Darwinism in the late 19th and early 20th centuries,¹⁸¹ an apparently contradictory process which Alfred Kelly -- who skilfully avoids the question of Neo-Lamarckism in his book -- has described as the "descent of Darwin."¹⁸² As Adolf Wagner wrote in 1908, "Noch vor zehn Jahren war es ein Wagnis, in Fachkreisen über den Lamarckismus in anderem Sinne als über eine Theorie von lediglich historischem Interesse zu sprechen. Ein solches Wagnis ist es allerdings auch heute noch, wenn es sich um ausgesprochen mechanistische Kreise handelt, nicht mehr aber, wenn die Gesamtheit der Biologen in Betracht kommt."¹⁸³ Von Uexküll begins one of his best-known books with the words: "Wir stehen am Vorabend eines wissenschaftlichen Bankrottes, dessen Folgen noch unübersehbar sind. Der Darwinismus ist aus der Reihe der wissenschaftlichen Theorien zu streichen."¹⁸⁴ Indeed, this "Eclipse of Darwinism," as Julian Huxley termed it, or "Non-Darwinian Revolution," as Bowler refers to it, and its Neo-Lamarckian aspect was widespread.¹⁸⁵ While not all Neo-Vitalists and *Monistenbunder* were Neo-Lamarckians, the three most important neo-Vitalists, Haeckel, Driesch and Bergson were, as were Raoul Francé, von Uexküll and Peter Kropotkin, the biocentric anarchist so important to the Weimar avant-garde.¹⁸⁶ Inevitably Neo-Vitalism and Neo-Lamarckism are closely associated, and as we have seen, by around 1907-08 Neo-Lamarckism or psychobiology as Francé termed it, had formed into what Wagner termed a "movement."¹⁸⁷

In his book *Geschichte des Lamarckismus als Einführung in die Psycho-Biologische Bewegung der Gegenwart*, Wagner defended Neo-Lamarckism from accusations of "mysticism" in much the

same fashion Haeckel had:

Ich las unlängst irgendwo die "Klage", dass die heutige Zeit beunruhigende Symptome zeige, an der exakten Beobachtungstätigkeiten und der exaktwissenschaftlichen Deutung der Tatsachen kein Genüge mehr zu finden, sich neuerlich einem gewissen, naturwissenschaftlich angehauchten "Mystizismus" in die Arme zu werfen. Unnütze Sorge! ... mit wissenschaftlichen Neuerungsbestrebungen hat der Begriff des "Mystizismus" nichts zu tun, es wäre denn höchstens, dass man diesen Begriff auf alles anwenden will, was wir noch nicht bis auf den letzten Grund durchschauen; dann aber wäre auch die exakte mechanistische Naturwissenschaft durch und durch "mystisch"! In Wahrheit aber hat die neue Bewegung einen sehr realen Hintergrund: das Verlangen der Menschheit nach geistiger Befriedigung. Zu dieser bedarf sie mehr als bloss Disputierstoff für die Gelehrten; sie will, dass die Wissenschaft bewussterweise Anschauungen zusteure, welche eine harmonische Ausgestaltung des geistigen Innenlebens zulassen, welche die Wirklichkeit möglichst von allen Seiten erfassen, statt alles in eine ungenügende einseitige Doktrin einzuzwängen.⁹⁸

However contradictory, Haeckel's attempt to synthesize the mechanist with the vitalist, the scientific with the "religious" or "mystical," the material with the ideal and the Darwinian with the Non-Darwinian, was precisely what many saw as necessary to combat a perceived degeneration of society and the alienation of the public from science at the turn of the century. This "organicist synthesis" is what Francé was referring to when he wrote of "die neue Naturphilosophie" in the *fin-de-siècle*.⁹⁹ Francé's wife, the writer Annie Francé-Harrar characterizes this almost theological, *vitalmystisch* attitude of *neue Naturphilosophen* when she recounts the Munich circle of the Buddhist Hans Ludwig Held early in the 20th century. Referring to those who followed Haeckel's idea of the "ensouled cell," she writes:

Auch Naturwissenschaften sassen unter uns, die hingerissen waren von dem Wundern der lebenden Zelle. In ... dem Protoplasma, sahen sie die einzige Voraussetzung sämtlicher organischer Leistungen, zu denen für sich auch der Geist zählte. Immerhin hiel-

ten sie es für möglich, dass sich aus dem Nucleus doch vielleicht noch so etwas wie eine Zellseele herauschälen liesse.¹⁹⁰

Probably the most metaphysical attempt to establish a neo-Nature Philosophy was that undertaken by Edgar Dacqué, professor and curator at the Palaeontological State Collections in Munich.¹⁹¹ Through his popular books, especially *Urwelt, Sage und Menschheit* of 1924, he became known for his untypically anthropocentric and teleological-vitalist Goethean revision of Darwinian theories of evolution: that we humans, or rather our "entelechy" (understood in the old Aristotelian rather than new Drieschian sense) contained within "itself" the *Urform* of our ultimate development from the very start of our evolution, i.e. that we evolved from palaeozoic forms to the modern *within* our "species" rather than *through* various genres and phyla, and that myths of monsters such as sea-serpents and dragons (dinosaurs) prove this. As a consequence, writes Dacqué, "der Mensch [ist] die grundsätzliche Urform, weil er das Höchste ist" and all other species represent evolutionary dead-ends.¹⁹² Seeing everything in frankly metaphysical Vitalist (what he termed "magical") terms, Dacqué believed all phenomena were "ensouled." As a contemporary review put it: "Dacqué's [Ideen sind] von Bedeutung: weniger wegen seiner sachlichen Ergebnisse ... als vielmehr als Symptom für den Krisenzustand der gegenwärtigen Naturwissenschaft, der dadurch entstand, das heute alle Grundlagen des naturwissenschaftlichen Denkens zum Problem geworden sind."¹⁹³

While popular with biocentric non-scientists with metaphysical leanings such as Ernő Kállai, Mies van der Rohe, Hugo Häring, Kandinsky and the art historian Carl Georg Heise, this theory was so speculative as to be categorized as pseudo-science despite Dacqué's respectable position.¹⁹⁴ Though he rejected both Haeckel and Driesch in his writings, and he made little reference to Lamarck, Dacqué's thought is inconceivable without the Neo-Vitalist aspects of Haeckel's and Driesch's

thought or without the Lamarckian revival.

It was out of the turn-of-the-century Neo-Nature Philosophy, especially as elaborated by Driesch, and out of Neo-Lamarckism,¹⁹⁵ that the scientifically more respectable Organicism and Holism developed as part of the anti-mechanistic, systems-based approach to biology in the early part of the century.¹⁹⁶ Emergent from the Neo-Vitalist and Monist circles of Haeckel and Driesch, it is impossible to separate this phenomenon out from Neo-Vitalism and Monism despite the rhetoric -- both then and now -- to the contrary, though Holism and Organicism came to the fore after the First World War, at a time when Neo-Vitalism and Monism had gone out of fashion.¹⁹⁷ The Germans have referred to this phenomenon as "die Neue Biologie," a term which -- as Michael Kröger's usage of it indicates -- is employed in a historical sense in Germany, while in North America it is in use for an analogous phenomenon as it exists today.¹⁹⁸

It is not necessary here to unravel or resolve the debates around this "New Biology" concerning natural selection versus Neo-Lamarckian and teleological views of evolution, materialism versus idealism, monism versus dualism, mechanism versus Organicism, Neo-Vitalism or Positivism, and reductivism versus Holism. The current state of science history is one of confusion -- both terminological and conceptual -- concerning these matters. Rather than argue for an airtight category with firm boundaries, what I will do is to focus on the commonalities of what I see as the interlocking complex of Organicism and Holism. Thus, though -- like Neo-Vitalism and Monism -- it was not necessarily anti-materialistic, and -- like Neo-Vitalism and Holism -- it did not always eschew mechanistic explanations, the New Biology shared ground with the romantically-derived, neo-pantheistic, almost mystical focus on the problematic of life and Becoming of *Lebensphilosophie*, the *Monistenbund*, and Neo-Vitalism.¹⁹⁹

A comparison of the definitions of Organicism and Holism

quoted above should make clear that Holism is subsumable under sense no. 2 of Organicism. Thus it is not surprising that the terms are used interchangeably. For example Parascandola writes of Henderson's "Holistic, organismic approach" as a single trend in the biological science of the early 20th century.²⁰⁰

Recently there has been at least one serious attempt each by historians to define Organicism and Holism as categories in the history of science: Donna Jean Haraway's construction of Organicism as a new Kuhnian paradigm engendered by a shift from the use of the machine metaphor (by both mechanists and vitalists) in 19th century biology to the metaphor of the organism, and Anne Harrington's definition of Holism as part of a cultural response -- as expressed through science -- to the perceived mechanization of society and thought.²⁰¹

Both Haraway and Harrington construct complex models of Organicism and Holism. Haraway's model involves groups among German-speakers, Americans, the British and the Soviets in which she privileges their rhetorical anti-Vitalism:

Perhaps these rough divisions constitute separate paradigm groups in the Kuhnian sense. But across the national and individual differences, these men hold common views and address themselves to common problems that they felt the older perspectives dealt with poorly. All saw vitalism as part of the mechanistic paradigm rather than opposed to it because both were limited by the same images and metaphors. The organicists saw themselves as a new phenomenon working at ideas and experiments made possible only very recently by internal developments in biology and by salient intellectual transformations in other sciences including physics and political theory.²⁰²

Harrington's model of an anti-mechanistic science of "Holism," meanwhile, invokes Neo-Lamarckism as a common feature:²⁰³

The new "holistic" science of life and mind that was to replace the old Machine science was really more a family of approaches than a single coherent perspective. The need to do justice to organismic purposiveness or teleological functioning ... was central... Beyond that need was a range of overlapping understandings.²⁰⁴
Even as holism in some respects proved to be a plu-

ralistic and sometimes even quarrelsome phenomenon, in other respects it always remained a surprisingly closely knit one: certain recurring themes and problems made up a coherent conceptual grid whose architecture, without being rigid, allowed distinctions to be drawn between innovations and theoretical developments that were 'inside' the frame and those that posed a threat to it Although political events like World War 1 had repercussions for everyone, holistic comrades-in-arms 'recognized' one another in the first instance because they all (quite literally) spoke a common language, made use of certain common theoretical conventions, and saw themselves as in dialogue ... with common philosophical, scientific, and cultural legacies.²⁰⁵

While Harrington limits her discussion to germanophone Central Europe, and so her category is not strictly speaking comparable to Haraway's, it shares features with Haraway's "organismic paradigm." An obvious intersection is Gestalt theory, which comprises much of Harrington's construction, and forms a major part of the German component of Haraway's. More crucial is the common origin of Haraway's and Harrington's categories in the work of Hans Driesch,²⁰⁶ establishing both Organicism and Holism as -- historically at least -- varieties of a sort of neo-Neo-Vitalism. Thus, though Haraway's perspective is international while Harrington is specific to Central Europe; and Haraway defines her category via a shift in the prevalent metaphor, while Harrington identifies Holists by their conceptual commonalities and common social response, they are describing aspects of a single category, a kind of Organicist/Holist complex.

Because of its common origin in the work of Driesch, moreover, this complex intersects extensively with Neo-Vitalism, Monism and *Lebensphilosophie*. Indeed, in the minds of many writers, Organicism and Vitalism are equivalent or very closely linked. Thus, Jack Burnham does not distinguish between the two when he writes that "[t]he organic ideology and its vitalistic manifestations must be looked upon as part of a continuum of evolving attitudes within the social concep-

tion of what defines *organic*."²⁰⁷ Not only does Harrington cite Driesch as the founder of German Holism, she names among its important representatives Driesch's friend von Uexküll -- a pairing recognized by Heidegger himself.²⁰⁸ When the Driesch scholar Horst Freyhofer discusses Driesch and von Uexküll (along with Klages and Bergson) as "Vitalists," and Heidegger as "Organicist," we begin to realize the extent to which *Lebensphilosophie*, Organicism, Holism and Neo-Vitalism are interlinked.²⁰⁹

While Haraway is anxious in her book to distinguish between the organismic paradigm and Neo-Vitalism, others such as Hilde Hein have argued for their essential identity. Haraway holds that the machine paradigm determined the mechanist-vitalist debates of the 19th century. "Vitalism of a quasi-metaphysical kind is in opposition to mechanistic materialism as a philosophy, but it is not in opposition to the machine [metaphor]."²¹⁰ Thus, as we have seen Harrington point out, the various groups of early 20th century Organicists "saw vitalism as part of the mechanistic paradigm rather than opposed to it because both were limited by the same images and metaphors." She follows Morton Beckner in arguing that it was not until the turn of the century, when Driesch and others challenged the prevalence of the machine as a metaphor for biological science, and replaced it with the organism, that a true Organicism could develop: "The first third of this century was marked by constant debates between neomechanists, neovitalists, and older branches of each. Despite the fact that each camp rested secure in the belief that reason and experiment resided with it alone, no resolution could or did occur until the machine paradigm common to mechanist and vitalist alike was fundamentally altered."²¹¹ As a result, both Haraway and Beckner paint a complex picture of the relationship between Neo-vitalism and Organicism. Beckner writes:

In fact there is considerable affinity between the two schools. They both agree that the methods of the

physical sciences are applicable to the study of organisms but insist that these methods cannot tell the whole story; they agree that the "form" of the single whole organism is in some sense a factor in embryological development, animal behaviour, reproduction, and physiology; and they both insist on the propriety of a teleological point of view.... But [they] differ in one fundamental respect: [vitalism] holds ... that the characteristic features of organic activity ... are caused by the presence in the organism of a nonphysical but substantial entity.... [This] affinity ... is more than an accident. In the history of biology it is difficult to disentangle vitalistic and organismic strands.... The distinction between them was drawn clearly only in the twentieth century....²¹²

Building on Beckner's argument, Haraway stresses the differences between Organicism and Neo-Vitalism. She characterizes Organicism as a realist structuralism and Vitalism as metaphysical.²¹³ She sees this "Organicist structuralism [a]s a third way to deal with form, organization, and regulation; [a]s different from both the additive point of view (mechanism) and from philosophies of emergence (vitalism)."²¹⁴ That this distinction between Organicism and vitalism is problematic, however, is suggested by Haraway's own usage of the term "nonvitalist organicist," as well as by Hilda Hein's materialist view:²¹⁵

[Organicism] is not a third alternative to mechanism and vitalism, but a shuffling confusion of the real question which divides them. Mechanists argue in favor of a continuity of nature such that the laws and concepts in terms of which the physical universe can be made intelligible are also sufficient to explain living phenomena. Vitalists deny this, maintaining instead that there is a break in continuity ... such that additional laws and explanatory concepts must be introduced in order to account for life. Since these are contradictory positions, it is impossible to opt for a third alternative, and organicism does not do it.... [I]n the end organicism takes its place on the side of the vitalists.²¹⁶

An analogous controversy exists within the discourse around whether Holism is a variety of materialism or not. Garland Allen distinguishes between "mechanistic materialism"

and "Holistic materialism" or simply "Holism," implying that Holism is by nature always materialist.²¹⁷ Golley on the other hand, writes of both materialist and idealist Holists.²¹⁸ While some have been anxious to emphasize the distinctions between Holism and Neo-Vitalism,²¹⁹ the same arguments linking Organicism to Neo-Vitalism hold in the case of Holism and Neo-Vitalism: The Holist/Organicist complex emerged from the *Neue Naturphilosophie* to form a "New Biology," part of the nature-centric neo-Romantic cultural current of the *fin-de-siècle*.

e. Biozentrik

Die biozentrische Denkweise erscheint jetzt nicht mehr als etwas Mögliches, sondern als der einzig mögliche Weg, um die Erlebnisse (nichts hindert zu sagen: Natur) zu ordnen, nutzbar zu machen, kurz gesagt: um leben zu können.... (Francé 1923)²²⁰

While I have been focusing on the commonalities, one could equally well enumerate a list of differences between the constituents of this *fin-de-siècle* nature-centric Neo-Romanticism. Indeed, because of these differences, it is problematic to conceive of it as a single *geistesgeschichtlich* category. It might be more useful to think of these constituent discourses (such as Neo-Vitalism, Organicism/Holism, the *Monistenbund*, *Lebensphilosophie*, Neo-Lamarckism, the *Neue Naturphilosophie*, Biologism, the *Reformbewegung*) as sets containing arrays of concepts and beliefs. While the arrays of concepts and beliefs within each set are not identical, there is a degree of commonality between them, i.e. the sets intersect. (Figure 2) The intersection I am concerned with here consists of an array of closely-related concepts -- the privileging of biology as the source for the paradigmatic metaphor of science, society and aesthetics; a consequent biologically-based epistemology, indeed psycho-biology; an emphasis on the centrality of "nature," "life" and life-processes rather than "culture;" an anti-anthropocentric *Weltanschauung*; the self-

directedness and "unity" of all life; a valorization of *kosmo-vitale Einsfühlung*; a stress on flux and mutability in nature rather than stasis; a concern for "whole-ness" as opposed to reduction at all levels -- which were present to significant degrees in all these categories. It is to refer to this biologicistic, Organicist, nature-centric, i.e. anti-anthropocentric, *vitalmystisch*, psycho-biological, Vitalistic-Monist and holistic aspect of the components of *fin-de-siècle* Neo-Romanticism, i.e. their intersection in this respect, that I revive a German term employed by Klages, Francé and their followers: *Biozentrik*.²²¹ *Biozentrik* is here constituted as a commonly-held bundle of concepts, theories, beliefs, practices, and prescriptions which privileged *Leben* over *Geist*, which foregrounded the concept of our inseparability from and dependence on nature, and which had their origins in Romantic *Naturphilosophie*, biologism, and neo-Lamarckism. If we mentally reconstruct, in turn, other epistemological fields in the intellectual world of the time, e.g., Empiricism/Positivism, Marxism/Socialism, and *Biozentrik*'s Neo-Romantic sibling, the turn-of-the-century Occultist revival as we have *Biozentrik*, i.e. as the intersection of groups of concept-bundles or discourses -- and if we take into consideration the fact that individuals change their views over time, indeed that they hold conflicting views simultaneously -- then we begin to understand how it is that a single discourse such as Neo-Vitalism can contain within itself both materialist and idealist views, both mechanism and Vitalism, or how the Monist League could include Haeckel and Ostwald as well as the arch-Positivist Mach.²²² If we think finally, of the fact that the synchronic structure outlined above also changes diachronically -- with the period around the First World War and its aftermath constituting a particularly salient rupture, then we begin to understand how complicated history can be, and why it is crucial to keep individual differences and life-stories as well as changes over time in mind while trying to understand

the "big picture" through reductive modelling.

Though I do not shirk from the concept of influence and though I attempt to outline possible conduits of information flow, in recognition of the above, I do not argue for definite means of transmission. I recognize that information flow is a complex process which, in the end, it is impossible for historians to account for. This complexity is analogous to that of each subjectivity being discussed.

Just as the constituent discourses of *Biozentrik* included materialists and mechanists who shared these beliefs with most Positivists, or like Haeckel and Francé, occupied mediate positions or shifted between these views over time, these discourses included others (such as Haeckel) whose *kosmovitale Einsfühlung*, their *vitalmystisch* belief in the unity of "nature," or some metaphysical animating force, drive or substance, were shared with the intersection-core of Occultism. This is where figures such as Rudolf Steiner, Arthur Dove, Bruno Taut, Wassily Kandinsky, Maurice Maeterlinck and Emily Carr can be situated: if we conceive of each individual subjectivity as a set in her or his own right holding an array of ideas, the boundaries of their sets extend into the intersection-cores we term Occultism and *Biozentrik*.²²³ Others, such as Klee, Arp and Mies are roughly coterminous with the intersection-core of *Biozentrik*.²²⁴ One could conduct a similar analysis concerning the commonality between *Biozentrik* and Marxism/Socialism, embodied in biocentric Anarchist figures such as Kropotkin and Landauer, but also in artists such as Hausmann, El Lissitzky and Moholy-Nagy.

Biozentrik can perhaps best be characterized as *Naturromantik* -- including both its scientific and metaphysical baggage -- updated by 19th century biology. In its usage by Klages, *Biozentrik* was contrasted with both logocentrism and anthropocentrism.²²⁵ *Biozentrik* rejected anthropocentrism, de-centering the human species in favour of "nature" and "life." Since humanity was seen to be part of these larger

wholes of life and nature, everything humans do and produce is also part of nature for biocentrists, and hence explicable in its terms. As Haeckel and others had before him (see the list of quotations at the start of this chapter), the English Organicist philosopher Alfred North Whitehead wrote of the realization that "...human beings are merely one species in the throng of existences. These are animals, the vegetable, the microbes, the living cells, the inorganic physical activities."²²⁶ The inevitable ethical dimension of this realization has led to environmentalism. Indeed it is no accident that the science of ecology emerged from *Biozentrik*: Haeckel coined the term *Oekologie* in 1866, in his magisterial *Generelle Morphologie*,²²⁷ and the Neo-Vitalist Holist von Uexküll coined the term *Umwelt* (environment) in 1909.²²⁸ Francé, building on his version of the ecosystem concept, *Biozönose*, carried out ground-breaking work in the field of soil ecology. As we have seen, Francé was also an early environmentalist: it was typical for *Biozentriker* to be engaged in both the descriptive (scientific) and normative (environmentalist, political) varieties of ecological study just as Haeckel's intentions were scientific, normative, ethical and aesthetic. With this in view it is less surprising that we should find biocentrically minded individuals in the Anarchist, Socialist, and Fascist camps.

The cognate English form of *Biozentrik*, "biocentrism" has a history of usage: The 1933 edition of the *Oxford English Dictionary* defines "biocentric" as "treating life as a central fact," while in his introduction to Klages-disciple Hans Prinzhorn's study of the art of mentally disabled people *Bildnerlei der Geisteskranken*, James L. Foy writes that "Biocentrism provides an outlook on man through a new kind of recognition of man's intimate and inescapable kinship with, and dependence upon, the self-regulating animal, vegetable and inorganic worlds."²²⁹ Given the above discussion, it comes as no surprise that the dominant usage today in English is an

environmentalist one, but one that is cognate with earlier uses. Thus, environmental ethicist Paul Taylor employs the term to refer to the view that "the living things of the natural world have a worth that they possess simply in virtue of their being members of the Earth's Community of Life," ideas which echo those of Francé and other Weimar biocentric thinkers unknown to Taylor.²³⁰ In his book Taylor restates the *biozentrisch* view of humans being merely one species among many, part of the greater system of life:

We have considered five general empirical truths which, when brought together and placed in the forefront of our awareness, give us a sense of oneness with all other living things and lead us to see ourselves as members of one great Community of Life. To face the realities of human existence expressed in these truths is to become cognizant of our status as members of the Earth's whole biotic community, a status we share with every other species.²³¹

Taylor's text, and his insistence that this outlook is "consistent with all known empirical truths" (i.e. biological and other science) is an indication of the continuity, though unconscious, of his ideas with those of interwar and *fin-de-siècle* biocentrism, even if recent usage of the term carries with it the implication of a more radical environmentalist position.²³² Taylor's ignorance, like Kirkpatrick Sale's, is typical of post-war environmentalists.²³³ That Taylor's usage of "biocentrism" ultimately derives from the German is suggested by David Oates crediting its early use to the "Deep Ecology" movement, founded by the Norwegian ecologist Arne Naess, who emerges from Norwegian *Biozentrik* -- a discourse closely related to the German one -- represented earlier by figures such as the Nobel-prize-winning-novelist-turned-Nazi, Knut Hamsun. This -- in a Freudian sense -- *repression* of their own history on the part of environmentalists is another topic awaiting treatment.²³⁴

3. Politics

Thus men ... wander about in the garden of Nature ... with few exceptions [they] pass blindly by one of the most patent principles of Nature's rule: the inner segregation of the species of all living beings on this earth. Even the most superficial observation shows that nature's restricted form of propagation and increase is an almost rigid basic law of all the innumerable forms of expression of her vital urge. Every animal mates only with a member of the same species.... The stronger must dominate and not blend with the weaker, thus sacrificing his own greatness. Only the born weakling can view this as cruel, but he after all is only a weak and limited man; for if this law did not prevail, any conceivable higher development of organic living beings would be unthinkable. (Hitler 1924)²³⁵

a. The German Cultural Sphere

While I employ "biocentrism" to refer to a phenomenon throughout Europe and North America (this will be useful in discussing the biomorphic Modernist art general to Western 20th century culture), in this dissertation I focus on biocentrism in German-speaking Central Europe during the first half of the 20th century. I do so because in most respects -- the widespread nature of the biocentric mode of thinking, from the point of view of artistic production, and the interaction of scientific image-making with both biocentrism and biomorphic Modernism -- the German cultural sphere was paradigmatic. As Anne Harrington writes concerning Holism:

The self-defined borders, colors, and contours of this [holistic] grid clearly mark it as a 'German' construction. That said, we should nevertheless not insist on a more rigid definition of holism's 'Germanness' than was in fact operative at the time. The paper trail left by holistic life and mind scientists did not respect the political borders of Germany proper but to varying degrees embraced the German-speaking parts of Switzerland, Hungary, and Austria as well.²³⁶

Harrington's contention is not only born out within the Holistic discourse, however. While Driesch and Haeckel were

from Germany; Ostwald and von Uexküll were Baltic Germans who made their careers in Germany; and Mach was a Bohemian who taught in Prague and Vienna during his career. Perhaps most instructive in this connection is the case of Raoul Francé, whose biography I will here outline.

Francé's polyglot background was not unusual in the Austro-Hungarian empire.²³⁷ His paternal great-grandfather is supposed to have been a serviceman in the Napoleonic army who was stranded in Austria during the French invasion. Francé's paternal name, "Franzé," is apparently a corrupted spelling of what Francé's grandfather had referred to himself as: *français*. This grandfather assimilated to the German-speaking population of that part of Bohemia known as the Sudetenland, but Francé's father married a Moravian woman from a family who were Czech nationalists. To complicate matters even further, there were also Polish and Hungarian branches of the family. Given that they named their son "Raoul" rather than "Rudolf," that Raoul changed the spelling of his name from Franzé to Francé, and that he was educated to speak French, the family seemed intent on maintaining connections with their French roots.²³⁸ Francé was born in Vienna, moved to Budapest with his family in 1884 when he was ten, and spent his boyhood summers with the Moravian side of the family. Thus he learned German and Czech at home, French from a tutor, and Hungarian after the move to Budapest.²³⁹ Francé attended university in Budapest, worked in the Hungarian National Museum under the neo-Vitalist biologist Géza Entz, and published scientific articles. Like so many other late 19th century immigrants to Budapest, by the turn of the century Francé was well on his way to assuming Magyar ethnicity.²⁴⁰ In 1898, however, he was appointed researcher at the Institute for Plant Diseases at Mosonmagyaróvár (Ungarisch-Altenburg), in a bilingual (German-Hungarian) part of Hungary not far from Vienna. There he wrote his first book, *Der Wert der Wissenschaft*, a collection of aphorisms on the value of science. The volume was published in

Dresden by the first publishing house he sent it to; indeed it was such a success that it opened up for Francé the possibility of moving to Germany to advance his career.²⁴¹ When his first marriage failed, feeling isolated in a small town, and by his own account, made aware of his "Germanic" ethnic roots while living in a partly German-speaking area, he quit his job and moved to Munich in May of 1901.

Francé's experience was analogous to that of Ernő Kállai, who, born in Hungary of mixed ethnic Serbian and ethnic German background, moved to Germany to further his career in the arts in 1920, after having taught in an isolated German-Hungarian community.²⁴² It is significant that given Francé's options at a time of congealing national identities in Central Europe, he chose a "German" identity over the "Czech," "Austrian," "Hungarian" or even "French" alternatives available to him. It is likely that, in addition to the personal factors listed above, Germany's leadership in the field of biology at the time had to do with this choice, much as Berlin's reputation as an important artistic centre was important to Kállai in his decision to move there. In any case, as we shall see, this choice was a fateful one, and bears out what is surely a cliché, that it is the *Mischling*, displaced emigrant who becomes most obsessed with ethnic or cultural "purity" and with *Heimat*.²⁴³

Thus, in Germany, Francé -- even more than Kállai -- became "German."²⁴⁴ In Munich, at his Biological Institute, Francé met the Polish-German biologist and writer Annie Harrar, whom he married in 1923. After the Institute was ransacked during the Munich commune of April 1919, the Francés moved to the small, story-book-perfect medieval Franconian town of Dinkelsbühl on the "Romantische Strasse," a move which -- apart from a withdrawal from the metropolis -- had *völkisch* overtones which can be interpreted as an attempt to strike "roots" in a mythical German *Heimat* that Francé and Harrar had little connection with. While he had written of the Munich

region as an organic whole which had been rendered inorganic by massive immigration, he saw Dinkelsbühl and the region around it focused on the medieval trading town of Rothenburg ob der Tauber as a paradigmatic "*Heimat*" *Biozönose*.²⁴⁵

Francé spent his winters in the intellectually more stimulating city of Weimar, however. A Socialist at some point in his early career, Francé remained "officially" outside of politics at this time, though in Weimar he moved in the neo-conservative circles of Weimar's cultural elite around Nietzsche's sister Elisabeth Förster-Nietzsche, Friedrich Lienhard, and when he came to accept the Nietzsche Prize, Spengler (of whom he was otherwise critical).²⁴⁶ As pointed out by Raoul Hausmann in his critique of Francé's 1922 book *Die Kultur von Morgen*, it was a troubling document, with its biologicistic call for a return of German culture to its "organic" roots in the "forest," that is, to "Gothic" culture, and in its call for a "eugenic" "cleansing" of the German "race."²⁴⁷ Indeed -- and Hausmann could not have known this at the time -- it paralleled some of the ideas current in National Socialist circles. It should be pointed out, however, that Francé did not hold German culture or the German "race" (Francé did not use the term "Aryan") to be superior to others as the Nazis did; all his suggestions were applicable to other "cultural *Biozönose*" by extension, and he spoke out directly for the maintenance of cultural diversity in the world.²⁴⁸ Ironically, it was also during the early twenties that Francé exercised his greatest influence on members of the Leftist intelligentsia. Indeed it is a significant coincidence that Francé spent the winter months in Weimar from 1919 to around 1924, years that the Bauhaus was located there, and a period which coincided with the peak periods of his literary production, his fame and his influence, despite the fact that he was ambivalent towards the Bauhaus itself.²⁴⁹ Sometime between 1923 and 1926, Francé moved back to his native Austria, to Salzburg. After this, when they were not engaging in expedi-

tions around the world, for health reasons, the Francés began to spend their winters in Ragusa (Dubrovnik), on the Adriatic coast of what was then Croatian Yugoslavia, eventually moving there for most of the year.²⁵⁰ The outbreak of war made it necessary for them to flee Croatia. Francé returned to Hungary this time, dying in Budapest of his ailments in October of 1943, four months before the German occupation.²⁵¹

Francé's case is exemplary of the kind of cultural space in which biocentrism evolved and flourished late in the last century and early in this one: While polyglot in its Central European origins as Harrington has pointed out, it was focused on Germany; balanced between the political Right and Left. Why this should be so is a question about which there is a fair degree of agreement amongst historians. As the central locus of Nature Romanticism, and later of *Lebensphilosophie*, biological science, and the various forms of *Neue Naturphilosophie*, the ground for biocentric thinking was most fertile in Germany, even more so than in Britain and North America, which shared with Central Europe the "Nordic" heritage of Romantic Nature Philosophy. As Kelly writes:

Germany, rather than England, was the main center of biological research in the late nineteenth century. This professional activity attracted large numbers of popularizers, who took advantage of the vast and unusually receptive reading public. For not only was Germany the most literate of the major European countries, it also offered the richest environment for Darwinism to expand beyond the confines of science. Political liberalism had been thwarted in Germany in 1848, and Darwinism became a pseudopolitical ideological weapon for the progressive segments of the middle class. Science commanded respect as an unstoppable form of progress.²⁵²

Precisely because we are dealing here with the volatile Germanic cultural sphere, it is crucial to circumvent the trap of ahistoricism. Structurally, i.e. at the synchronic level, I believe that *Biozentrik* is a viable construct of the history of ideas, and I will use this term in a synchronic sense. Diachronically however, it is problematic, even over the

temporal span of 1890 to 1940, for as political contexts have shifted, even similar sets of ideas took on very different meanings.²⁵³ With the rise of National Socialism which, as we have seen in the Introduction -- and as suggested by the passage from Hitler's *Mein Kampf* quoted above -- was in one of its major guises a biocentric variant of international Fascism, the connotations of biocentric ideas shifted in general. Speculations on whether Haeckel would have joined the Nazis had he lived beyond 1919 on the one hand; and discussion concerning Driesch's, von Uexküll's, Spengler's and Klages' refusals to join the Nazis despite recruitment efforts, versus Francé's and Prinzhorn's associations with them on the other, are two entirely different problem-complexes.²⁵⁴ As Kelly writes of Social Darwinism,

Nowhere is the task of disentangling the ... strands of Social Darwinism more formidable than in Germany. For the historian, German Social Darwinism seems trapped in the dark shadow that Nazism casts backward into the late nineteenth century. Certainly Hitler's crude bombast recalls the very words of Social Darwinism.... However the common historical treatment of German Social Darwinism as a theoretical rehearsal for Nazism is a mistake. Reading history "backward" may have its rewards.... But such insights are likely to be bought at the price of distorted perspective. Cast in the role of proto-Nazism, Social Darwinism almost inevitably takes on not only a malevolence, but also a prominence, coherence, and direction that it lacked in reality.²⁵⁵

In other words, it is because of the shadows cast by Nazism backwards and forwards in time and the high-voltage political charge that these shadows transmit, that one must distinguish Klages', Francé's, von Uexküll's and Spengler's "interwar biocentrism" from *fin-de-siècle* biocentrism or the "New Nature Philosophy" as Francé termed it, not to mention the biocentrism of the Post-World-War-Two period.²⁵⁶

b. Bramwell's "Ecologism": Problematizing the Taxonomy

When it comes to biocentrism and its constituent discourses, confusion concerning political affiliations within the Left-Right continuum is rife. One is struck by the degree to which biocentrically-minded individuals either tended to remain outside mainstream, Left-Right party lines, or by their slippage from one to the other. Historians working within this binary continuum dealing with *Biozentriker* and the discourses their interactions constitute, have struggled with the presence of either position's political other within itself.²⁵⁷ Thus, the German literary historian Otto-Ernst Schüddekopf has referred to the "Ökologen der zwanziger Jahre, die konservativen Revolutionäre und ständestaatlichen Utopisten" as the "Left-wingers of the Right."²⁵⁸ The Marxist literary and cultural historian Gert Mattenklott has remarked meanwhile that one could describe the "ecologists of the 1920s" with equal justification as the "Right-wingers of the Left."²⁵⁹ He goes on: "Wir finden aber die Belege für solche Auffassungen durchaus nicht nur bei den gegenwartsverdrossenen Autoren der konservativen Revolution." They are just as apparent among Marxists such as Alfred Döblin.²⁶⁰

Because of the nature-centric aspect of National Socialism, and because many Nazis were genuinely biocentric, through guilt by association, both the neo-Marxist and Positivist camps tend to associate the constituent discourses of biocentrism -- *Lebensphilosophie*, Neo-Vitalism, the *Monistenbund*, Organicism/Holism and popular Darwinism -- with the Right, indeed with Fascism (though through an interesting case of selective memory and marking the post-1950s environmentalist movement has tended to be exempt from this).²⁶¹ This combination of reading history in reverse and guilt by association was established before the Second World War by Marxist critics such as Ernst Bloch, György Lukács and Arnold Hauser, who have induced the tendency among subsequent Leftist writers to always judge all biocentric views negatively, seeing them as

totalizing, a-historical or anti-dialectical, i.e. as essentially "reactionary," and thus as antithetical to a "progressive" social consciousness.²⁶² Mainstream post-war Positivist science historians, meanwhile, have identified biocentrism's constituent discourses with the Vitalist camp of the Vitalist/Mechanist debate, the side discredited by the science of biology since World War II, especially since James Watson and Francis Crick's deduction of the structure of the D.N.A. molecule in 1953.²⁶³ Burnham's statement that "[b]ecause vitalism centered its reasoning on noncausal and nonphysical beliefs, it has functioned as a conservative, if not reactionary, agent" demonstrates that the Positivist view accords with the Marxist position that biocentrism is ideologically "reactionary."²⁶⁴

Because environmentalism has typically been seen (and seen itself) to be a "Left-wing" cause since the 1960s, the biocentric aspect of National Socialism is still surprising to many, and is (usually unconsciously) repressed by environmentalists. Indeed, major Nazis such as Rudolf Hess and Richard Walter Darré were biocentric,²⁶⁵ there was a significant segment among Nazi scientists that was Holist\Organicist,²⁶⁶ and the Nazis appropriated the term *die neue Biologie* to their own racist science.²⁶⁷ The passage quoted from Hitler demonstrates that his thinking was typical of the crude biologism common at the time (though there is little if any evidence of outright environmentalism in *Mein Kampf*). This is why the Nazis courted figures such as Spengler, Klages, von Uexküll and Driesch, and why even those biocentrists living in Germany who ultimately rejected them (Spengler, Driesch and von Uexküll), were treated with kid-gloves.

The extent of this appropriation is indicated in a statement made by Hans Reiter, president of the Reich Health Office in 1937: "Today, the German people may well be considered first in the world in terms of the organic views of its leaders."²⁶⁸ Indeed Robert A. Pois has identified a "Religion

of Nature" within National Socialism, a fusion of neo-Romantic nature mysticism and a crude biologism, indications of the Nazis' participation in biocentric discourses:²⁶⁹

The 'naturalism' of the [National Socialists] certainly has parallels with a sort of fuzzy nature-mysticism which can be observed throughout the West.... Thus, in its anti-Judaeo-Christian emphasis upon the sanctity of nature, 'National Socialism' has to be seen as symptomatic of a general, perhaps largely unconscious, discomfiture with the Judaeo-Christian tradition, something which attained *political* expression in Germany but can hardly be seen as confined to it.²⁷⁰

It is the case that some *Biozentriker* (Francé, von Uexküll, Paul Krannhals, Spengler) were associated with *völkisch* "Heimat" ideology²⁷¹ and the *konservativen Revolution*; that some, such as Francé, Prinzhorn, and Heidegger, joined the Nazis (the latter remaining with them to the bitter end²⁷²) and Nazi Germany was in the mid 1930s the country in which biocentric ideas came closest to constituting a state ideology. However, there were also traditions of Leftist and Anarchist biocentrism (Kropotkin, Landauer), and prominent *Biozentriker* such as music educator Heinrich Jakoby, Gestalt Psychology-founder Wolfgang Köhler, and *Lebensphilosophen* Lessing, Bergson and Simmel, were of Jewish heritage.²⁷³ An example of the primacy that the racist ideology of Alfred Rosenberg enjoyed in the Nazi state is the 1933 murder of Lessing at Marienbad in Bohemia, one of the first political murders the Nazis arranged after the *Machtergreifung*.²⁷⁴ Furthermore, most Fascist parties were not ecologicistic at all,²⁷⁵ and an ultimately successful anti-Holistic/anti-Organicist backlash within the Nazi Party began to be conducted by "Nazi Mechanists" by about 1935.²⁷⁶ Probably as a result of this backlash, there were attempts to forcibly retire von Uexküll from his Institut für Umweltsforschung in Hamburg in 1936, and as we shall see, Francé was in trouble with the Party by 1938. Thus, while it is true that there was an association between aspects of biocentrism and of National

Socialism, it is also true that some biocentrics were opposed to Nazism, just as many Nazis were opposed to biocentric ideas. In other words, just as not all Modernist art was informed by a Leftist ideology (e.g. Futurism), not all biocentric thinking was associated with Fascism. Biocentrism is neither *essentially* nor *predominantly* Fascist.

Still, it is apparent that the partial Nazi appropriation of biocentrism has marked its constituent discourses. Thus the characterization of *Lebensphilosophie*, Neo-Vitalism, Monism and the Organicist/Holist complex as Right-wing is typical of the older literature, as is the tendency in recent scholarship to point out the actual complexities of the issue. Schnädelbach writes that

[i]f the ... history of life-philosophy is so little known, and if its revivals, in the form of the Guru-boom, the ideology of the 'Greens' and the 'Alternative Society' ... are not usually recognized as such, this is chiefly because life-philosophy is branded with the stigma of irrationalism and of being a precursor of fascism.²⁷⁷

As Bramwell notes, "Life-philosophy ... certainly coincided with the rise of National Socialism, but the line of development was not a straightforward one, nor is there any apparent causal link."²⁷⁸ Fellmann seconds this view and calls for a reassessment:

Die ideologische Indienstnahme hat die Idee der Lebensphilosophie bis zur Unkenntlichkeit verunstaltet. Auch und gerade nach der ideologischen Katastrophe bleibt die Aufgabe bestehen, die Idee der Lebensphilosophie einer kritischen Prüfung und einer gerechteren Beurteilung zu unterziehen. Es muss erst viel vom Schutt der unseligen Vergangenheit abgetragen werden, um das humane Gesicht der Lebensphilosophie freizulegen.²⁷⁹

A one-sided judgement, furthermore, of *Lebensphilosophie*, ignores what Hartmut Nowacki has pointed out to be the powerful current of *Lebensphilosophie* within the German Communist Party itself during the Weimar Republic.²⁸⁰ With respect to the political complexion of the *Monistenbund* Bramwell writes:

Although Monists have been described as right-wing because most were eugenically-minded, their political affiliation was for the most part firmly on the left... Many belonged to the German Social Democratic Party ... [t]here was [even] a move by Monists to merge with ... [that] Party. Carl von Ossietzky and Magnus Hirschfeld, both prominent left-wingers, were Monists. Wilhelm Ostwald thought that all Monists must be oriented against conservatism, orthodoxy and ultramontanism.... Haeckel's followers in the Monist League belonged to the optimistic, progressive, scientific Left.²⁸¹

Alfred Kelly also points out that the political affiliations of the *Monistenbund* membership ranged from the Left to the Right and this span was mirrored in Monism's reception.²⁸²

While, as Gasman shows, there were Rightists who supported Haeckel and his views, as Bramwell points out, the opposite was also true. Freud was an admirer of Haeckel from the 1890s onwards, while one of Nazism's first victims was sex researcher and gay activist Magnus Hirschfeld, whose Institut für Sexuallforschung, founded in Berlin in 1919, had a "Haeckel Room" for public meetings decorated with busts of Haeckel and Darwin.²⁸³

As much as *Lebensphilosophie* and Haeckelian Monism, Neo-Vitalism has been seen as a direct precursor to National Socialism. We have seen how Klages was seen as "Nazi" because of his anti-Semitism and because some of his ideas appealed to some National Socialists. Driesch, the most visible neo-Vitalist in Germany, and considered by Nazis and others as the "father" of Holism, was stridently anti-Nazi.²⁸⁴ As we have seen, von Uexküll, despite his close friendship with the prophet of racialism, Houston Stewart Chamberlain, showed himself to be opposed to the firing of Jewish academics in 1933-34. While Gasman presents Haeckel as a "Volkish Prophet" (sic), the neo-Marxists Dale Riepe and David de Groot see him as a "progressive biologist," and he was explicitly denied as a "forerunner" by at least one prominent Nazi.²⁸⁵ The Neo-Vitalist British novelist D. H. Lawrence is similarly problem-

atic when it comes to his placement within this political taxonomy.²⁸⁶

Finally, the pattern established here is to be found in the literature on the Holist/Organicist complex. Typical in some respects is the case of the Holist psychologist Felix Krüger, who lectured at the Bauhaus in May of 1932 under its most Leftist director Hannes Meyer, and then praised Hitler at the Thirteenth Congress of the German Society of Psychology the following year, only to be denounced by the Nazis in 1934.²⁸⁷ Because of this complexity, Harrington argues for a nuanced historical treatment:

The 'racializing' of German holism and its partial absorption into the politics and mythology of National Socialism is an important part of the larger story of German holism.... Nevertheless, even if we know how part of the story ... is going to 'come out,' it is important that we resist 'discovering' the outline of a terrible future in holism's past or imagining that all holistic, vitalistic, or teleological views of nature are part of a larger 'destruction of reason' [Lukács] that can be tracked in some straight, degenerating line from the romantics to Hegel to Nietzsche to Hitler. Such claims and temptations are familiar in the older secondary literature on modern Germany, but one can argue they do not do justice either to the historical contradictions of modernity in general or to the role of anti-mechanistic, pastoral, and alternative scientific thinking as a reaction to and comment on those contradictions.... [B]efore 1933, various liberal, democratic, and Jewish scientists were attracted to both the intellectual and cultural promises of holism and managed to share concerns about the 'mechanization' of both science and society with their more reactionary and, in some cases, anti-Semitic colleagues.²⁸⁸

It is important to keep in mind that in combination with prescient ideas on environmental protection, biocentrically minded individuals were typically racialists and eugenicists, positions which, after their adoption by the Nazis, have been discredited, or exposed as potentially dangerous.²⁸⁹ But even in the case of as prominent a figure as Haeckel, the situation is by no means clear-cut. Haeckel is typically praised for his

nature-centric proto-environmentalism, but reviled as a Social Darwinist eugenicist or even as a racist.²⁹⁰ Kelly argues that though some of Haeckel's writings had racialist overtones, and he became more nationalistic, indeed anti-Semitic with age, this was by no means unusual at the time (Darwin felt the English to be superior to other "races"), and Haeckel's anti-Semitism can be read as a concomitant of his stand against the Judaeo-Christian heritage in general rather than as racially based.²⁹¹ Even his Social Darwinism has been called into question by Kelly, who after discussing Haeckel's contradictory writings on the subject, concludes that on the whole "Haeckel ought not to be labelled a Social Darwinist."²⁹² In any case, the most popular Monist writer, Wilhelm Bölsche, was unambiguous in his opposition to Social Darwinism: "...for Bölsche, Darwinian Monism implied a humanitarian internationalism, not a racist nationalism."²⁹³ As Kelly concludes, "[h]istorians seeking the roots of Nazism have failed to make some crucial distinctions. They have falsely associated popular Darwinism with radical Social Darwinism and racist anti-Semitism. Unfortunately such loose reasoning is typical of the general character of most quests for the ideological origins of Nazism."²⁹⁴

Important, again, to notice, is that, as with the discourses discussed above, Social Darwinism and eugenics have been shown by historians to have extended over the Left-Right spectrum. Thus, eugenics, which received extreme expression in the National Socialist attempts to exterminate those considered to be inferior, the infamous *Vernichtung lebensunwerten Lebens*, received relatively "mild" expression through sterilisation programs in "progressive" Sweden, Switzerland, Canada and the United States, applied to those deemed "unworthy" to reproduce.²⁹⁵ Indeed, eugenics was seen as "progressive" by many social reformers on the Left before, and even after Nazism.²⁹⁶ As Weindling comments,

Hitherto the history of eugenics has been neglected

because it has been seen as a product of ultra-nationalist racial (or *völkisch*) movements. According to this interpretation, the new anti-semitic rhetoric of the purity of blood and race which gathered force from the 1880s was realized inevitably in the Nazi genocide. But although there were connections between racial hygiene and anti-semitism, the situation was complex, and eugenics did not necessarily point the way towards Nazi racism. There were those of other political persuasions, liberal and socialist, who looked to biology and medicine as the means to engineer social improvements.... [E]ugenics was authoritarian... but it was neither a product of the theory of a superior Aryan race, and nor was it inherently Nazi. The synthesis between Nazism and eugenics was a process of adaptation and appropriation on both sides.²⁹⁷

The German historian Schmuhl concludes that though eugenics as a movement prepared the way for some Nazi social policies, "Das Euthanasieprogramm war kein genuin nationalsozialistisches Phänomen."²⁹⁸ The case of Moholy-Nagy's mentor, the eugenicist Protestant doctor and art collector Hans Harmsen is instructive. Though he was a supporter of limited and voluntary sterilisation programs in the early 30s, he actively resisted the implementation of the Nazi euthanasia program in 1935.²⁹⁹ As Richard Wollin has commented, "with the advantage of historical distance, one realizes just how much of an overlap exists between the cultural left and right in the case of the interwar generation. For critically minded German intellectuals of this period, the vitalistic critique of *Zivilisation* had become an obligatory intellectual rite of passage."³⁰⁰

In her book *Ecology in the Twentieth Century: A History*, Anna Bramwell has proposed a political model which addresses this historical conundrum.³⁰¹ She writes: "My own hypothesis is that the apparent contradictions of the ecological movement can be resolved by seeing it as forming a new political category in its own right, with a history, right wings and left wings, with leaders, followers and a special epistemological niche all to itself.... Ecologism is a political box. It is a

new box, into which many distinguished and important thinkers fit who fit only partially into other, better-known boxes." Bramwell conceives of "ecologism" as consisting of two major components: while one of them, deriving from Haeckel, is roughly equivalent to the biocentric discourse-intersection as I have defined it here, the other major component of "ecologism" is the field of energy economics.³⁰² Thus, while ecologism is close to biocentrism, it is not identical to it. Still, I considered using "ecologism" rather than "biocentrism" as the *geistesgeschichtlich* category relevant to biomorphic Modernism. I rejected the idea, however, because even if I choose to elide the economic component of ecologism, (which has little or no relevance to the artists I am dealing with), Bramwell defined "ecologism" as a category *foregrounding* an environmentalist politic, a characteristic which, despite its presence, is not at the centre of concern of the artists and art theorists I am dealing with here. Indeed, I am concerned with *distinguishing* those artists not incorporating an ecological politics into their work from those who did, a division by and large constituted by the conceptual (as well as stylistic) divide between biomorphic Modernism ending in the 1960s with the remnants of the "bug and blob" style of that decade; and "Eco-Art" beginning at the end of the 60s in the work of Hans Haacke, Alan Sonfist, Patricia Johanson, Josef Beuys, and the Helen and Newton Harrison team.³⁰³ While biomorphic Modernist artists tended to be *naturromantisch* first and foremost -- locked into the *fin-de-siècle* sensibility of a new nature Philosophy -- or their practices emerged from a New Vision, a "New Objectivity" informed by the biologicistic functionalism of interwar biocentrism; Eco-artists were principally concerned with an emerging eco-politics. Though interwar biocentric figures such as Klages, von Uexküll and Francé were eco-political pioneers, it was their latent Neo-Romanticism and biologism which the artists appropriated, rather than their nascent environmentalism. Indeed, in general, concerns

with the preservation of "nature" were not widely politicized until after the publication of Rachel Carlsen's *Silent Spring* in 1962. When this politicization did happen, its artistic equivalent was the shift from the vaguely nature-centric biomorphic Modernist style, towards overtly polemical Eco-art. While it is useful to distinguish between biocentrism and ecologism with respect to artistic production, however, Bramwell's arguments concerning ecologism as a *political* category distinct from the Left and Right, are useful in dealing with the political affiliation of *Biozentriker* and their discourses.

Bramwell is of course not the first or the only one to question the standard Left-Right political taxonomy. "Third Way" politics has been a phenomenon at least since the early 20th century in the West,³⁰⁴ and as we shall see, Francé was self-consciously "Third-Way" in the early twenties. The year Bramwell published her book, Susan Sontag referred to "a tenacious metaphor that has shaped (and obscured the understanding of) so much of the political life of this century, the one that distributes, and polarizes, attitudes and social movements according to their relation to a 'left' and 'right.'"³⁰⁵ Though her idea may not be entirely new, and whatever problems and ambiguities there might be with her coverage, historiographic methods and ideological stance, Bramwell's expanded taxonomy of political categories is important, because -- as in the case of Kállai's *Bioromantik*, by the act of naming a discursive tradition, she helps us to notice its manifestations, and therefore to construct its history.³⁰⁶ Perhaps most importantly, given the overlap between biocentrism and ecologism, the definition of ecologism as a political category adumbrates the views -- benign and sinister -- that *Biozentriker* actually held. It allows one to examine them on their own merits rather than issuing either general condemnations of them as "reactionary," or engaging in a lazy assessment of them all as "progressive."

c. Interwar *Biozentrik*

When man attempts to rebel against the iron logic of Nature, he comes into struggle with the principles to which he himself owes his existence as a man. And this attack must lead to his own doom. (Hitler 1924)³⁰⁷

...die Lebensphilosophen der zweiten Generation... [waren jene] in der die Lebensphilosophie in ihre ideologische Phase tritt. Es ist die Zeit zwischen den beiden Weltkriegen. Zu ihnen gehören als prominenteste Figuren der Untergangsprophet Oswald Spengler, der Widersacher des Geistes Ludwig Klages und Theodor Lessing, der Philosoph der Lebensnot. Ihre Schriften enthalten viel Merkwürdiges, nicht selten Haarsträubendes, aber auch hier fördert die Selbsterfahrungsperspektive überraschende und ernst zu nehmende Einsichten zutage. (Fellmann 1993)³⁰⁸

After 1918 ... holism often spoke with a political accent. (Harrington 1995)³⁰⁹

Fellmann, Harrington, and others have attributed this "political accent" to the crisis of German society arising from Germany's defeat after the First World War, a crisis of which Hitler's *halbgebildetes* writing was merely one acute symptom. Given the politicization of what had not been a particularly politicized practice previously, and a decided shift away from *Vitalmystik* in the world views of the interwar biocentrics, whether towards a biologicistic *Kulturpessimismus* (as in the case of Spengler and Klages' *Biozentrik*), or towards an optimistic biologicistic functionalism (as in the case of Francé's *Objektive* or *Biozentrische Erkenntnislehre* and von Uexküll's *Biologische Weltanschauung*), it seems advisable to constitute interwar Germanic biocentrism as a temporally discontinuous discourse despite continuities in thinking with *fin-de-siècle* biocentrism. Indeed, a kind of historical rupture is discernable around World War One within the discourse of *Biozentrik*, and a subsequent emergence into the highly-charged political landscape of Weimar Germany. From a more romantically inclined *Neue Naturphilosophie*, as Raoul Francé termed turn-of-the-century biocentrism, the practice and thinking of

Francé, von Uexküll and Klages constituted an interwar biocentrism which was both more pragmatic and functionalist, and more pessimistic than the pre-war variety.

The constitution of interwar biocentrism as a discourse is, however, a daunting task. Fellmann refers to the "Masse der zweit- und drittklassigen Autoren" of the second generation of Life Philosophers.³¹⁰ Even taking into consideration Harrington's crucial study of interwar German Holism,³¹¹ Proctor's work on National Socialist biology and medicine, and Fellmann's writing on late (i.e. interwar) *Lebensphilosophie*, this is a region of the history of science and philosophy even darker than the turn of the century once one exits the spotlight zones of figures such as Spengler and Klages. With little choice but to engage a "quick and dirty" strategy, I have assumed here that Driesch, Klages, Francé, Spengler, and von Uexküll are paradigmatic enunciators of interwar German biocentric thought, and I will take the contents of Mies van der Rohe's library as an ersatz-"canon" of this discourse. While abridged and arbitrary, I think that this strategy is at least a viable starting point for the history of biocentrism between the wars which at some point should be written.

i. Mies' Library

There is of course no canonical set of biocentric texts, but there is at least one surviving library assembled between the wars which focused on literature that, as architectural historian Fritz Neumeyer put it, "followed a nature-philosophical-biological conviction" which reflected "that coordination between nature, physics, and philosophy that had evolved in the twenties," and that was assembled by an architect operating within avant-garde Weimar German artistic circles. This is the library of Ludwig Mies van der Rohe.³¹²

In addition to the most complete collection I know -- including German libraries -- of Francé's and his wife Annie Francé-Harrar's books, relevant titles by Goethe, Carus,

Nietzsche, Bergson, Driesch, the late Simmel, Dilthey, Klages, and von Uexküll, indicate Mies' interest in the central authors of the biocentric tradition.³¹³ Indeed it is only works by the older generation of *Monists* such as Haeckel, Ostwald, and Bölsche -- out of fashion after the war -- which strike one as missing from this collection as it is now: Unlike Haeckel and Bergson, Driesch continued to be read and regarded highly after World War I.³¹⁴ Indeed George Rousseau refers to the "pan-European crisis during the 1920s over Hans Driesch's vitalism," a crisis which Bakhtin was commenting on in 1927 when he coined the term "critical Vitalism," and Harrington has described Driesch as "the most influential contemporary spokesman" for the shift from a machine to an organic metaphor of biological thought.³¹⁵

Among works of biocentric psychology, i.e. psychobiology (another topic awaiting historical treatment), Mies owned Hans Prinzhorn's Klagesian *Leib Seele Einheit*, two books by Holist psychologist Felix Krüger, the *Lebensphilosoph* Eduard Spranger's *Lebensformen*, Helmuth Plessner's *Die Einheit der Sinne*, and Rudolf Odebrecht's *Gefühl und Ganzheit*.³¹⁶ Mies' library also included Dacqué's *Urwelt Sage und Menschheit*, important to the development of Kállai's conception of *Bioromantik*, and among books retained by Wassily Kandinsky during his life.³¹⁷

There was after the First World War a variety of organicist political theory which, as Eckart Scheerer has pointed out, was part of "...a larger movement among conservative German intellectuals to visualize a 'third way' between the evils of socialist Marxism on the one hand, and those of liberal capitalism on the other."³¹⁸ Simultaneously, many on the Left and in the Youth Movement were interested in the Anarcho-Organicist political science of Kropotkin and Landauer; and these left-wing biocentric views received their philosophical expression in Theodor Lessing's 1924 book *Untergang der Erde am Geist (Europa und Asien)*.³¹⁹ In fact, it was not unusual during the early twenties for cultural figures such as

Mies -- and even artists further to the Left such as Lazar El Lissitzky -- to be interested both in biocentric anarchism and conservative organicist political thought.³²⁰ Thus, though Oscar Hertwig's and Jakob von Uexküll's books on the state as an organism are missing from Mies' library,³²¹ in addition to Francé's books on related subjects, Mies did own Oswald Spengler's best-seller *Decline of the West*, the right-wing organicist Francé-fan Paul Krannhals' *Das organische Weltbild*, Chrysostom Panfoeder's, *Das Organische*, Adolf Wagner's *Der organische Staat*, and Rudolf Leinen's *Der Wille zum Ganzen*, as well as the crucial texts of Kropotkin.³²² The extent to which biocentric views were current among left-wing German intellectuals is suggested by the fact that by the mid 1920s Hans Haustein was writing regularly on themes related to interwar *Biozentrik* in his "Biology" column in the *Sozialistische Monatshefte*, a left-wing journal read by and contributed to by many avant-garde artists and critics, including Kállai.³²³

Since for biocentric thinkers biologicistic aesthetics and political theory were major themes, it is not surprising that Mies' library included many books of the teens and twenties which dealt with the biology of plants and animals, anti-anthropocentric books which focused on the higher level of technical and sensual development of such species than was normally attributed to them.³²⁴ Apart from two copies of Francé's influential *Die Pflanze als Erfinder* and related volumes by Francé, Mies owned works of zoology and plant science by Hans André, Leopold Bauke, Frederik J. J. Buytendijk, Hermann Drechsler, the Flemish poet Maurice Maeterlinck, Martin Philipsohn, and Albert Wigand.³²⁵ That these poets and scientists were aware of their work within a contemporary biocentric context is suggested by the Dutch biologist Buytendijk's statement of 1932 that "Klages hat der biozentrischen Erscheinungsforschung ihre eigene ... Methode ... gegeben," and of Bauke's reference to Francé as "unser Meister."³²⁶ Apart from Francé's, Hermann Kranichfeld's and Remigius Stölzle's works

in Mies' library underline the non-Darwinian and/or Neo-Lamarckian point of view within the biocentric discourse.³²⁷ In addition to Francé's influential books on the subject, particularly *Bios: Die Gesetze der Welt*, ecological, Organicist and Holist philosophies of biology in Mies' library included Emerich Zederbauer's *Die Harmonie im Weltall, in der Natur und Kunst*, and the Budapest philosopher Baron Béla von Brandenstein's *Metaphysik des organischen Lebens*.³²⁸ Concerning biocentric aesthetics, again, in addition to Francé's writing on the subject in *Bios* and other books, Mies owned the biocentric art historian and theorist Ernst Fuhrmann's book on ornament, *Der Sinn im Gegenstand*, the Francé-inspired biocentric design theorist Siegfried Ebeling's *Der Raum als Membran*, and Ernst Kropp's *Wandlung der Form*, a work popular among members of the Deutsche Werkbund in the 1920s which traded on the naturamorphic analogy in all fields of design, including architecture, and which was one of the earliest publications to feature the photography of Karl Blossfeldt.³²⁹

ii. Klages and von Uexküll

Klages' background combined many of the elements which comprise the category of biocentrism. Early on he studied chemistry in Leipzig with Wilhelm Ostwald, the future founder of the *Monistenbund*, as well as psychology with Wilhelm Wundt, thus exposing him to the two main scientific streams of the time: the *neue Naturphilosophie* and Positivism.³³⁰ Later, in Munich in 1893, one of his professors was Wilhelm Conrad Röntgen, who pioneered the alternative imaging processes which would inspire the scientific image analogy to such an extent, but he also studied psychology with Theodore Lipps -- along with Fechner a leading figure of the field of psychological aesthetics -- as well as philosophy.³³¹ Profoundly inspired by Neo-Romanticism, especially in its Nietzschean biocentric guise, he founded the "Kosmische Runde" in Munich with the writer Karl Wolfskehl in 1899. Among his closest friends were

the *vitalmystisch* proto-Expressionist writer Stefan George, Ricarda Huch -- the most important biocentric writer in Germany who was a woman, and her cousin Friedrich Huch.³³² As a key member of George's Expressionist circle, August Wiedmann sees Klages' anti-rationalist philosophy as having been important to the development of Expressionist aesthetics.³³³ Concerning his philosophical influence, Klages enthusiast and scholar Hans Kasdorf writes that "[e]ine so umwälzende Wirkung auf die Philosophie seiner Zeit wie etwa Kant um 1800 hat Klages um 1930 nicht gehabt.... Andererseits aber möchte ich die Wirkung von Klages auf seine Zeitgenossen etwa in den Jahren von 1920 bis 1950 stärker und vielfältiger nennen als diejenige Nietzsches auf seine Zeitgenossen in einem vergleichbaren Zeitraum seines Lebens."³³⁴ If this is true -- and even if it is an exaggeration -- then it only highlights the extent to which Klages has disappeared from memory, not to mention Nietzsche's staying power.

This disappearance is analogous to that of Houston Stewart Chamberlain's close friend Jakob von Uexküll, who, besides Francé, was the most cogent representative of the functionalist, biologicistic variety of interwar biocentrism. After developing the concept of *Umwelt* [environment] in 1909, von Uexküll was determined -- on the eve of World War One -- to provide the "Bausteine zu einer biologischen Weltanschauung."³³⁵ Von Uexküll's influence on his contemporaries in many fields of endeavour was enormous, but he is little-known today -- especially in the English-speaking world -- despite his invention of the concept of *Umwelt* [environment].³³⁶ His writings were important to several important figures of the Weimar avant-garde. Indeed, a necessary study to be undertaken is von Uexküll's influence on figures such as Karl Ernst Osthaus, Mies van der Rohe, Theo van Doesburg, and Adolf Behne, the latter whose highly influential 1918 book *Die Wiederkehr der Kunst* is a von Uexküllian manifesto for the renewal of art on a biologicistic basis.³³⁷

Klages probably exercised the strongest influence on the artists of Weimar Germany through his environmentalist lecture "Mensch und Erde," and through his *Ausdruckskunde*, the study of 'expression' through rhythm -- especially as transmitted through his writing on graphology, "characterology" and rhythm.³³⁸ Plessner has named Klages, along with Freud, the most important transformative force on modern psychology.³³⁹ Because of the privileged status Klages accorded images [*Bilder*] as authentic means of perception, Fellmann has indicated the potentially enormous influence Klages exercised on Gestalt psychology.³⁴⁰ The aesthetic implications of Klages' biocentric psychology were enunciated in the popular writings of his disciple Prinzhorn, through whom they had a powerful effect on contemporary "primitivism" among Modernist artists.³⁴¹ Besides Prinzhorn, among Klages' admirers one can assemble a group as diverse as Walter Benjamin, Hannes Meyer, W. H. Auden, Alfred Kubin, and the art historians Josef Strzygowski and Sixten Ringbom.³⁴²

Between the wars the ecstatic, neo-Romantic *kosmische Einheitsgefühl* of the turn of the century was inverted into Klages' pessimistic biologism. In Weimar Germany Klages' *Kulturkritik* represented the 'shadow side' of *Vitalmystik*. This view held that as creatures of nature we are not only capable of feeling the ecstasy of our oneness with it, we are equally able to experience its "demonic," often destructive, power. Furthermore, while cosmic rhythms animate our own *Seelen*, our human *Geist* alienates us from nature, and this process is both dangerous and irreversible. Those who espoused this ambivalent or outright pessimistic biologism (such as Ernő Kállai and Raoul Hausmann) were critical of what they saw as the naive optimism of biocentric thinkers such as Francé and Moholy-Nagy.

iii. Francé

Die Menschensorte, die ihren Kleinkram als Sonderrecht auf das zäheste verteidigt und festhält, wird stets Millionen von Redensarten, um den kleinen, aber tief unwahre und eigensüchtigen Kern ihrer Sondereinstellung nicht nur zu verbergen, sondern bis in die höchsten Höhen des Ideals und der Notwendigkeit umzulügen. Wir wollen einen solchen Menschentypus einmal ansehen, wenn er, nicht von den Blicken der Öffentlichkeit beobachtet, seine unwahre Heldenpose ausspielt, sich gehen lässt in den kleinen, privaten Augenblicken seines Lebens und darin seine wahre Natur herauskehrt ohne Schleier und ohne Rücksicht. Und wir wollen uns einen Menschen auswählen, einen bekannten Philosophen und Forscher, der sich erhaben dünkt über den alten bürgerlichen Menschentypus und seine Selbstsicherungen, Betrugsmanöver und Vorurteile. Es gibt einen solchen Mann, den wir betrachten wollen, der sich für einen Führer und Lehrer der Menschen in einem menschlichen Sinne ausgibt oder vielleicht wirklich hält: Raoul H. Francé. (Hausmann 1923)³⁴³

The interwar biocentric writer with perhaps the widest popular impact on Weimar German culture was Francé. Raised in an agnostic household, it was relatively easy for him to accept the prevailing scientific world view of the time.³⁴⁴ Like Klages', Francé's early interests and education were typical of the biocentric pattern. He discovered science as a young teenager, and he began using a microscope as early as 1887 when he was 13. He early on became an expert graphic renderer of what he saw through the microscope.³⁴⁵ To avoid being trained as a businessman as his banker father wished, he moved out on his own at age seventeen, and he became a drawing assistant for the Budapest satirical journal *Borsszem Jan-kó*.³⁴⁶ Thus, like his youthful heroes Haeckel and von Humboldt, Francé displayed aptitudes both as a naturalist and as an artist from youth. He seriously, and for quite some time, considered becoming a painter.³⁴⁷ He studied medicine at Budapest University, also attending classes in philosophy, art history and history, and he spent 1896 in Breslau in Silesia (now Wrocław, Poland) studying with the microbiologist Ferdi-

nand I. Cohn, discoverer of the bacterial spore.³⁴⁸ In 1897 he published his first work, *Der Organismus der Craspedomonaden* which, according to Roth, "even today is considered one of the classic works of protistology."³⁴⁹ He continued his study of philosophy on his own in 1898-99 while working as director of the Institute for Plant Diseases at Mosonmagyaróvár.³⁵⁰ As we have seen, there he read through much of the Western philosophical material, with the classics of the Vitalist and *Lebensphilosophisch* traditions such as Pythagoras, Aristotle, Spinoza, Kant, Goethe, Schopenhauer and Nietzsche, making the deepest impression on him.³⁵¹ But he was also affected by his study of Fichte, Hume, Leibniz, and Herbert Spencer.³⁵² He discovered the "neue Naturwissenschaft" of Driesch, Ostwald, Mach and others in 1898, which inspired him to write *Der Wert der Wissenschaft* around 1900. Moving from Hungary to Germany in 1902, Francé founded the German Microbiological Society in 1905, and its Biologische Institut the following year, which he directed until 1919. The Institut "developed into one of the most respected centers of microbiological research and education in Europe," becoming the centre of the new field of microbial ecology, and a site where Francé and his associates conducted research into plant physiology and "plant psychology."³⁵³ Founder or co-founder of several scholarly and popular scientific journals, in 1904 Francé established with Wilhelm Bölsche the scientific counterpart to Klages' Kosmische Runde, the Kosmos-Gesellschaft which published an important series of popular scientific books in the spirit of the "neue Naturwissenschaft."³⁵⁴ An original combination of often fresh research presented in a popular style, the "Kosmos-Bücher" series was an enormous success, and Francé himself produced twelve volumes for the series.³⁵⁵ He was also a founding member of the *Monistenbund* in 1906, the same organization he later criticized. The Kosmos-Bücher, Francé's post-war series of "Bios-Bücher" published by the Voigtländer Verlag of Leipzig, and his many

titles brought out by major German publishing houses, gained for Francé a popular following which is as remarkable for its intensity, as it is for the extent to which it has been since forgotten.³⁵⁶ By 1924 Francé's books had sold no fewer than one and a half million copies, and by 1962 they had sold a remarkable three million in total.³⁵⁷ And these statistics do not even take into account the numerous articles on a breadth of subjects which Francé published.³⁵⁸ The remarkable diversity of Francé's research and writing was reflected in the wide range of interest elicited by his production. As Adolf Wagner writes in his introduction to the *Festschrift* published for Francé's fiftieth birthday:

Diese Festschrift ist eine der merkwürdigsten, die vielleicht jemals einem Fünfzigjährigen zugeeignet wurden. Wohl sind wir gewohnt, Dichter einem Dichter, Gelehrte einem Gelehrten, Männer der praktischen Arbeit einem der ihrigen an einem solchen Tage ein gutes Wort und einen Glückwunsch darbringen zu sehen. Aber ganz ungewöhnlich ist es, wenn sie sich vereinigen, um es offen in die Welt hinaus zu sagen, dass sie alle von einem einzigen Kopf sich einmal irgendwie befruchtet und angeregt fühlten, und dass sie nun sich von den verschiedensten Seiten des Lebens die Hände reichen in dem einigenden Bestreben, jeder von seinem Standpunkt und dennoch eine für alle die Bedeutsamkeit dieses seltsamen Kopfes Francé anzuerkennen.³⁵⁹

We have seen that in his book *Der Organismus*, Francé wrote that "Das 'biologische Denken'... entspringt nicht einer Mode, einem Schlagwort, etwa vergleichbar dem von der Entwicklung ... vom Monismus ... das vor einem Menschenalter die Bildung und Kultur durchdrang und in Gärung versetzte. Denn es geht nicht wie jene von einer einzelnen Persönlichkeit aus, sondern durchsichert, nunmehr schon seit etwa einem Jahrzehnt die gesamte geistige Arbeit."³⁶⁰ Francé's implied criticism of Haeckel's central role in the Monist movement in this passage diverts attention from -- as Raoul Hausmann realized -- his attempt to assume an analogous role within what amounted to an Interwar neo-Monist biocentric movement.

Francé's intentions to found a "school" were already discernable early in the century. Around 1907-08, as Adolf Wagner states, Francé was instrumental in attempts to constitute "Psychobiology" as a "movement."³⁶¹ While, since he was a member of Haeckel's *Monistenbund*, Francé does not seem to have intended the "Psychobiological Movement" to rival Monism, Psychobiology was not identified as an aspect of the "Monist League."³⁶²

Two events of 1919 seem to have altered Francé's ambitions with respect to the Monist League, as well as his political sensibilities. In April of 1919, during the Bavarian Soviet Republic -- for no apparent reason according to the Francés -- Francé's Biological Institute was ransacked. As the Kropotkinian biocentric Anarchist Gustav Landauer was -- along with Erich Mühsam and Ernst Toller -- one of the three leaders of the *Räterepublik* in Bavaria, this event seems to have put to rest any sympathy Francé may have had for Socialism or Anarchist biocentrism.³⁶³ Francé must have been resentful towards Landauer for the lack of discipline and coordination which allowed his life-work to be so badly damaged.³⁶⁴

The other factor was the precipitous decline in the popularity among intellectuals of the Monist League during and after the war. The criticism of Haeckel was two-fold. On the one hand, anti-materialists such as Adolf Behne saw Haeckel and Ostwald as arch-Materialists and arch-Positivists, whose views led to the catastrophe of the Great War. As Behne wrote in 1916: "heute ist die Naturwissenschaft eines Haeckel, eines Ostwald, aller Monisten und Positivisten in den denkbar tiefsten Miskredit gekommen."³⁶⁵ On the other hand, with the publication in 1917 of Haeckel's *Kristallseelen*, others, such as Francé, came to oppose him for his apparent shift towards mysticism. In a clear reference to Haeckel, in his autobiography Francé wrote that the "neue Naturphilosophie" which had enthralled him around the turn of the century, later abandoned its original goals, and "in die okkultistischen Spekulationen

verlief."³⁶⁶ By the time of Haeckel's death in 1919 the old man's eclipse was almost total. Francé himself, who had a complex, ambivalent, indeed Oedipal relationship with Haeckel, was frank concerning the problems he had with his childhood hero.

Though -- with Monism out of fashion -- after the war Francé downplayed it as the context from which he emerged, he and his disciples saw "objektive Philosophie" as the heir to *Monismus*. Thus, in Fischer's official biography of 1924 Francé is referred to as a "Monist," that same year his conservative disciple Huberta von Bronsart describes his philosophical system as a "new Monism," and in his 1923 *Buch des Lebens*, Francé referred to it outright as "die wahre Monismus."³⁶⁷ With all this in mind, Francé's announcement of his ambitious "objective" or "biocentric" epistemology, his "biological thinking," made in 1920 at the meeting of the Schopenhauer Society, can be interpreted as an attempt to assume the leadership of post-war Monism, i.e. of interwar *Biozentrik*.³⁶⁸

Like Haeckel, Prinzhorn and von Uexküll, Francé aimed to popularize biocentric attitudes, both scientific and philosophical. Emphasizing this pedagogical, indeed evangelical role, no less important a figure of German literature than Stefan Zweig wrote the following appreciation for the *Festschrift*:

Eine von diesen Naturen, einer von diesen bindenden, ewig lernenden Menschen unserer Zeit ist für mich Raoul Francé. Er ist in die Tiefe der Welt eingedrungen und hat die in unseren Augen darum weit gemacht. Er hat mit fast religiöser Leidenschaft die Zusammenhänge gefühlt und ist aus einem bloss Gebildeten ein Bildner geworden. Vielfachste Anregung geht von seinem Werke und Wesen aus und dem geistigen Erkennen mengt sich hier freudige Ehrfurcht vor dem letzten unerkennbaren Sein, jene Ahnung der Göttlichkeit, die jedes Werk erst wahrhaft der Seele bedeutend macht. So lehrt er, eben weil er alles einzelne durchforscht, uns immer wieder die Sehnsucht nach dem Ganzen und schafft den Glaubenlosen einen neuen Mythos der Welt.³⁶⁹

While an artist or architect of the stature of Zweig was not included in this *Festschrift*, Francé's importance to the interwar German avant-garde was significant, and has never been fully appreciated.³⁷⁰ Even Stanislaus von Moos, who rightly suggests that Francé was "probably the most important inspiration for most European avant-garde artists and architects intrigued by the analogies of natural and technical form," does so in a footnote.³⁷¹ The year before Zweig's text appeared, early in 1923, Paul Westheim published a chapter of Francé's book on plants as inventors in the influential Berlin art periodical *Das Kunstblatt*.³⁷² This publication elicited a rush of interest among international Constructivists living in Weimar Germany. Lazar El Lissitzky was so enamoured of Francé's book *Bios: Die Gesetze der Welt*, that he incorporated ideas from it into the special issue of Schwitters's journal *Merz* he edited, and he sought contact with Francé.³⁷³ László Moholy-Nagy began to incorporate Francé's ideas into his Bauhaus teaching around the mid twenties, and, as I argue in Chapter Four, Moholy-Nagy's influential concept of "New Vision" -- which contributed to the aestheticization of scientific photography in Weimar Germany -- emerged out of his interest in Francé's writings. Architectural historian Fritz Neumeyer has pointed out the importance of Francé's thought to no less important a figure of the history of modern architecture than Mies van der Rohe.³⁷⁴ Indeed, as we have seen, Mies was such an ardent admirer of Francé that he had a standing order at Karl Nierendorf's bookstore in Berlin for any and all of Francé's books,³⁷⁵ and just as Moholy continued to teach Francé's principles at the School of Design in Chicago, Mies taught Francé's ideas while he was director of the Bauhaus, and he continued to collect Francé's books and teach him in Chicago while he was working at IIT. In 1926, before he was appointed director of the Bauhaus, Hannes Meyer placed Francé first on a shortlist of "latterday [intellectual] saints" which included only Einstein, Freud and the French entomol-

ogist Henri Fabre in addition to him.³⁷⁶ Friedrich Ebeling, Thomas Ring, Karel Honzík, Ernő Kállai; and possibly Friedrich Kiessler, Ella Bergmann-Michel and Hans Erni, were also affected by Francé, while as we have seen, Raoul Hausmann attacked him from a left-wing biocentric perspective.³⁷⁷

Based on hints and suggestions in the cited texts of Steadman, Elderfield and Nisbet, in Chapter Four I argue that the discussions around Francé's writings in the mid-20s gave rise to what could be termed a "biocentric Constructivist" discourse which sought the legitimation of these artist's interests in technology and geometric abstract style through Francé's biocentric philosophy. This discourse, furthermore, represented a shift in nature-centric avant-garde artistic practice which mirrored Francé's reformation of Monism (i.e. biocentrism), one from a more romantically-based, Expressionist art to the functionalism of the *Neue Sachlichkeit*.

Francé is an instructive example, however, of the ways in which biocentrism was affected by the political developments of the interwar period in Germany; there were structural parallels between his thinking and that of National Socialism from the early twenties onwards; indeed he was a biocentric who succumbed to what Fritz Stern has termed "National Socialism as Temptation."³⁷⁸ Indeed, in his critique of Francé made in 1923, and his following publication in *Die Aktion*, Raoul Hausmann characterized Hitler as "nur ein nebensächlicher Faktor" beside figures such as Francé and the Nietzschean-Christian pop-philosopher L. C. Häusser, who represent the

humanistisch-wissenschaftliche ... Seite des Nationalsozialismus.... Francé als Khung-Tseu- und Schopenhauer-'Vollender' [and Häusser] sind ... nichts anderes als die sich selbst für Genies, für Gipfel erklärenden Durchschnittsbürger, die ... zuviel und zu wenig wissen, um sich nicht zwangsläufig als Führer ... zu fühlen und anzubieten ... Volkskaiser zu werden.³⁷⁹

Hausmann's evaluation was both prophetic and a gross misjudgment of Hitler's potential. But Francé's relationship with the

far right was -- as in the cases of many biocentrics -- rife with contradiction. While -- as Hitler -- he may have had ambitions to be *Volksführer*, neither Francé nor his wife Annie Harrar were "pure" Germans, and neither pretended to be. In fact, both were part Slavic in background; Francé's mother being Moravian, and Harrar's father having been the Polish painter Alexander Sochaczewski.³⁸⁰ Francé was also part French and he never hid the fact that he grew up Hungarian. Both were children of immigrants; Harrar's father emigrated to Munich from Poland, while Francé's parents had moved from their respective Bohemian homes first to Vienna and then to Budapest. Francé -- like Klages -- criticized those Nietzschean categories which the Nazis favoured above all for misinterpretation, the "Will to Power" and the *Übermensch*,³⁸¹ and he expressed his admiration for Nietzsche's concept of "Europeanness." He held German culture in high esteem, indeed he saw it as central among European cultures, but only while making it clear that even it was subject to the judgement of his "objective," i.e. biocentric ethical standard. In *Plasmantik*, Francé writes:

Der letzte der grossen 'Weimaraner', der freilich den Geist von Weimar fortbildete zu seinem 'freien Europäertum', Nietzsche, hat dieses Vermächtnis wohl empfunden.... Das Vermächtnis des Besten, was Deutschland -- und deutsche Kultur ist das Herz der 'Kultur' überhaupt (glaubt es mir, dem Mischling aus drei europäischen Rassen, der ebenso viel Recht hätte, sich Romane wie Slawe zu nennen, wie er sich mit gleichem Recht als Deutscher bekannt) -- das Vermächtnis des Besten, was deutsche Kultur hervor gebracht hat, soll nun nachgeprüft werden mit den Augen und Kenntnissen der Wirklichkeit.³⁸²

Though both Francé and Harrar -- as many associated with the *konservativer Revolution* -- valorized German culture above all others, they were also fascinated by non-German cultures and wrote about them. Francé's love for Berlin as a city speaks of his enjoyment of cosmopolitanism³⁸³ while his book on Munich written in 1920 contradicted this, reflecting his

anger at his institute being ransacked during the Munich Soviet of April 1919. Indeed it displays a new-found *völkisch* conviction that uncontrolled immigration was a negative factor in that city's "organic" development, which was echoed in Hitler's disgusted discussion of Vienna's multicultural makeup a few years later.³⁸⁴ By 1921 Francé was promoting a social order which though it was (by his own admission) unattainable, was based on analogies to the "successful" insect societies of ants, bees and wasps, and was thus uni-racial, i.e. (unlike himself and his wife), racially "pure."³⁸⁵ The call of the self-avowed *Mischling* for racial purity within *Biozönose* is a subject calling for a psychoanalysis I am unable to engage in.

While, like many biocentrists on both the Left and Right at the time, Francé supported the concept of *Rassenhygiene* and eugenics as means to improve humanity and human society, he was not -- like Hitler and Rosenberg -- "racist" in the sense of a hierarchy of valuations among the "races." Rather he was -- like von Uexküll -- a racialist, i.e. he believed in the construct of "race" as something both real and valuable.³⁸⁶ That the Francés' were anti-racist is suggested by Harrar, who in her memoir criticizes Spengler's view, allegedly communicated to her directly, that the "white" race was the only "creative" one. However, she also expressed opposition to dictatorship in general, and Hitler and the Third Reich in specific in this memoir, and given her husband's later affiliation with the Nazis (which she fails to mention), it is possible that these statements were meant as a smokescreen to divert attention from his Nazi past.³⁸⁷

In 1924, however, on the question of the relative value of "races" Francé was direct: "Gibt es minderwertige Rassen? Das wäre aber keine 'objektive Philosophie', die sich einfangen liesse von der aus der Luft gegriffenen Behauptung, als gebe es minderwertige und höhere Rassen und Völker an sich."³⁸⁸ Because he believed that the culture of each race within its *Biozönose* was valuable in its own right, each was

also to be valued and maintained in as harmonious, and therefore "pure" way as possible. When his biographer asked him about his politics, Francé is reported to have replied with disquieting emphasis: "Sie fragen nach meiner Politik? Deutschland den Deutschen, Ungarn den Ungarn, England den Engländern, Afrika den Afrikanern, -- aber allen ihr Land und ihre Seele ganz bis zum letzten."³⁸⁹

A "racialist" rather than a hierarchical "racist," then, Francé -- also like von Uexküll but unlike Klages -- appears not to have been anti-Semitic. The fact that Francé had admirers of Jewish background such as Zweig, Lissitzky and Moholy-Nagy suggests that Francé was at least not openly anti-Semitic.³⁹⁰ He certainly did not object to his books being published by Ullstein, the most saliently "Jewish" and "cosmopolitan" of the big Berlin publishers,³⁹¹ and indeed by 1920 he had arranged for, or consented to, his books being published in Yiddish and Hebrew, not a common phenomenon at the time.³⁹² The most direct evidence in his writings of Francé's respect for Jewish culture, indeed of his opposition to anti-Semitism, is the anecdote "Der Rabbi als Erzieher," whose very title is an ironic comment on Julius Langbehn's 1890 book *Rembrandt als Erzieher*, an early document of German *völkisch Kulturkritik* known for its anti-Semitism.³⁹³ In this passage of his 1927 autobiography -- part of which appeared in the 1924 *Festschrift* published for his fiftieth birthday -- Francé paints an affectionate portrait of the elderly Moravian Rabbi who was his Czech relatives' neighbour, and clearly a grandfather-figure for him:³⁹⁴

Am ganz heißen Sommernachmittagen sass ich in der Synagoge mit ihm. Da war es kühl, und ein angenehmes grünes Licht floss von der Gärten durch den stillen Raum. Er las murmelnd hebräische Bücher, später unterrichtete er mich selbst in der wunderlichen Schrift des alten Wüstenvolkes, und ich lernte die Thora kennen und bekam allmählich eine tiefe Achtung vor der Besonnenheit und inneren Festigung dieses patriarchalischen Judenlebens.³⁹⁵

The young Francé, angry with his own father for not allowing him to pursue his chosen career, was soon to have a second Jewish father-figure in his life: As we have seen, at the age of twenty-two he studied with the microbiologist Ferdinand I. Cohn in Breslau, an experience which was decisive in the development of his scientific career.³⁹⁶

Early in the twenties, at the height of his popularity, Francé was careful to maintain an image of political neutrality. His biographer writes:³⁹⁷

Es ist... ganz selbstverständlich, dass Francé zwar von allen Parteien in Anspruch genommen wird, weil er die edelsten Seiten jeder Partei im Sinne der Lebenslehre zu den seinem macht, in der Tat aber keiner Partei angehören kann; denn seine Einstellung ist kulturpolitisch, und das heisst aufs Ganze gerichtet; er ist also parteilos. Man hat indessen wegen seiner Mitarbeit an völlig rechts und links gerichteten Blättern auf seine politische Gesinnung Rückschlüsse ziehen zu dürfen geglaubt. Ganz mit Unrecht. Hier sah und sieht er nur ein Mittel, zum Volke zu sprechen.³⁹⁸

This text can be read as a manifesto of a Bramwellian ecological politics as much as it can be interpreted as a statement of Francé's attempt to define himself as being outside politics. What is notable is Francé's programmatic decision to publish in both left and right-wing journals in order to reach as wide a readership as possible.³⁹⁹ With this in mind, it is less surprising that he was received positively by both the Left and the Right: While *Bios: Die Gesetze der Welt* was reviewed favourably in the *Sozialistische Monatshefte*, he had a following among left-wing *Jugendbewegten*, and he found admirers among left-wing intellectuals such as Moholy-Nagy, Lissitzky, Kállai and Hannes Meyer; he was also viewed positively by conservative and *völkisch* organicists such as Paul Krannhals, Adolf Wagner and Huberta von Bronsart.⁴⁰⁰ As early as 1924, Krannhals, author of *Das organische Weltbild*, saw Francé as a "Wegweiser zur völkischen Kultur."⁴⁰¹ In her account of Francé's philosophy, the neo-conservative von

Bronsart, after considering all the "alternatives" to what she perceived to be the cultural chaos of the time (rejecting Expressionism, materialism, Positivism, neo-Kantianism, Theosophy, the occult, the *Jugendbewegung* and Anthroposophy in turn), she asks rhetorically, "Aber wo ist der Führer?"⁴⁰² As Martin Müllerott has noted, "[Francé's] Einfluss auf sehr verschiedenartige Kreise, die in der Biologie ein weltanschauliches Fundament suchten, das ihren Vorlieben und Abneigungen entgegenkam, war weitreichend, auch solche mit völkischen Sympathien ... beriefen sich auf ihn."⁴⁰³ As recently as 1982 a völkisch environmentalist such as Gerhard Tenschert wrote a glowing appraisal of Francé, and the MUT-Verlag published a new edition of Francé's book *Die Entdeckung der Heimat*.⁴⁰⁴

It was the völkisch appraisal of Francé, however, that was prophetic. Historian Joachim Wolschke-Bulmahn has uncovered a letter written by Francé in 1938 to the German *Reichsschriftumskammer* which indicates that he was a member of the National Socialist Party at that point for "years," and that he had worked for the *Völkische Beobachter* before 1933 already.⁴⁰⁵ While one *might* (just barely) be able to account for the publications in the notorious *Völkische Beobachter* as part of Francé's strategy to publish in both left and right-wing journals during the twenties, working for a journal of this nature is suggestive of hatefully anti-Semitic, rather than merely or naively völkisch sympathies.⁴⁰⁶ How is one to make sense of this?

Francé denied a hierarchy of races in 1924 and published the decidedly philosemitic "Rabbi als Erzieher" anecdote in 1927, yet Francé's views were sometimes imperialist, and by implication, racist. Thus, his defense of cultures throughout the world in the early twenties had by 1928 shifted to support for European Imperialist expansionism in thinly-populated parts of the Third World as a "civilizing" tactic.⁴⁰⁷ In his 1934 book *Von der Arbeit zum Erfolg*, while there is no mention of Nazism *per se*, the chapter on America has racist overtones

of Nordic superiority and African-American inferiority. Yet, there is no hint of anti-Semitism in his discussion of the Jews of New York, and Francé includes strong words concerning the inhumanity of the slavery inflicted on African-Americans and of the genocide against native Americans.⁴⁰⁸

The clearest indication of specifically Nazi sympathies I have encountered in his publications of the 30s is contained in Francé's acceptance speech after his election to the "Deutsche Biologische Akademie":

Besonders drängt es mich, hier der Deutschen Biologischen Akademie zu Berlin zu gedenken, (sic) die mir die Ehre antat, mich zu ihrem Mitglied zu wählen, gleichsam als Symbol, für wie wichtig dieser Kreis, der so unermüdlich an der Erneuerung des deutschen Volkes schafft, die Gedanken der Bios-Philosophie hält. Wenn eine angesehene Körperschaft bester Männer unserer Zeit diese Gedanken naturgemässer Lebensweise und Lebensschulung als die Grundlage des neuen deutschen Kulturaufbaues aufnimmt und sie verbreitet, dann ist wohl die Hoffnung begründet, dass sie auch wirklich zum Leben gelangen und zu den Grundsteinen gehören werden, auf denen sich der Bau der neuen deutschen Kultur erhebt.⁴⁰⁹

The references to the construction of a "new German culture" in the context of Germany in 1934 are unmistakable. Like von Uexküll in the second, 1933 edition of his book *Staatsbiologie*, Francé was hoping that the National Socialist régime would realize his dream of an organic, "harmonious," biocentric society. And indeed in 1938 Francé's concept of *Biotechnik* was celebrated by Alfred Giessler as "German Science."⁴¹⁰ However, as Wolschke-Bulmahn points out, the context of Francé's 1938 letter is one which suggests "gewisse, nicht genauer bekannte Probleme mit NS-organen."⁴¹¹ Keeping in mind the anti-Holistic backlash after 1935 and Francé's apparent lack of anti-Semitic feeling -- indeed his philo-Semitism -- one cannot help but speculate that Francé's problems with the Party were connected to these factors.⁴¹² It is likely that like other organicists, Francé's star would have set by 1938, and this may have combined with his bad health to encourage

him to live on a year-round basis in Dubrovnik.⁴¹³ Francé's case is ideal as a demonstration of both the possible unities and the disjunctions between biocentrism and National Socialism, of the complexity of this association. Given his multifariousness in the 1920s, one cannot interpret either the centrist-conservative Mies', or the leftist Moholy's, Meyer's and Lissitzky's interests in Francé as constituting sympathies with *völkisch* or proto-Fascist thought. It is more convincing to see them as reflections of their own biocentrisms, and of the usefulness to them of Francé's naturalization of technology.⁴¹⁴

This complex, politically volatile *interwar Biozentrik* forms the context for the examination of the aestheticization of scientific photography as effected through Moholy-Nagy's "New Vision," the framing of biomorphic Modernism as *Bioromantik* by Kállai, and the production of biomorphic Modernist art in general.

Endnotes:

1. Friedrich Nietzsche, "On Truth and Lie in an Extra-Moral Sense" (1873) in: Walter Kaufmann, transl. and ed., *The Portable Nietzsche* (Harmondsworth, England: Penguin, 1968), 42.
2. Ernst Haeckel, *The Riddle of the Universe* [1900], Joseph McCabe, trans. (Buffalo: Prometheus Books, 1992), 11, 14
3. Theodor Lessing, *Untergang der Erde am Geist (Europa und Asien)* (Hannover: Wolf Albrecht), 1924), 13.
4. Walter Benjamin, "Theses on the Philosophy of History" [1940] in: *Illuminations*. Hannah Arendt, ed. (New York: Schocken, 1969), 263
5. Oswald Spengler, *The Decline of the West. Form and Actuality* (1918) Charles Francis Atkinson, trans. (New York: Alfred A. Knopf, 1927), 21-2.
6. Raoul Francé, *Der Weg zu mir: Die Lebenserinnerungen, erster Teil* (Leipzig: Alfred Kröner, 1927), 179-80. Francé is writing about the late 1890s.
7. Paul Klee, "Ways of Nature Study," *Staatliches Bauhaus Weimar 1919-1923*, reprinted in Paul Klee, *Notebooks. Volume 1. The Thinking Eye*, Jürgen Spiller, ed., Ralph Mannheim, transl. (Woodstock, N.Y.: The Overlook Press, 1992), 63.
8. Paul Klee, *The Notebooks. Volume 2. The Nature of Nature*, Jürgen Spiller, ed., Heinz Norden, transl. (Woodstock, N.Y.: The Overlook Press, 1992), epigram. For the original text, see Tilman Osterwald, ed., Paul Klee, *Die Ordnung der Dinge* (Stuttgart: Gerd Hatje, 1975), 122.
9. Ernő Kállai, "Bioromantik," *Forum* (Bratislava) (1932): 272.
10. Raoul Francé, *Bios, die Gesetze der Welt*, vol.2, (Munich: Franz Hanfstaengl, 1921), 284.
11. Paul Taylor, *Respect for Nature: A Theory of Environmental Ethics* (Princeton N.J.: Princeton University Press, 1986), 156.
12. In 1984 Edward O. Wilson coined the term "biophilia" to refer to the "innate tendency [of humans] to focus on life and life-like processes." (Quoted in Stephen R. Kellert's introduction to the volume of essays edited by him and by Stephen R. Kellert, *The Biophilia Hypothesis*, Washington D. C.: Island Press, 1993, 20.) Kellert goes on: "The biophilia hypothesis proclaims a human dependence on nature that extends beyond the

simple issues of material and physical sustenance to encompass as well the human craving for aesthetic intellectual, cognitive, and even spiritual meaning and satisfaction [deriving from nature]." Given this definition, the term "biophilia" could well be applied to turn-of-the-century life-centric intellectual tendencies.

Note that Haeckel employs the term "anthropism" as a collective term for "anthropocentrism," "anthropomorphism" and the "anthropolatric dogma." For Ernst Haeckel's anti-anthropocentric polemic, see *The Riddle of the Universe*, 11-13.

13. E.g. Anne Harrington comments that "[t]he history of science is still waiting for some systematic comparative analysis of twentieth-century holism in the life and mind sciences that would both clarify larger unifying patterns across cultural and national contexts and also tease apart salient distinctions." Harrington, *Reenchanted Science: Holism in German Culture from Wilhelm II to Hitler* (Princeton: Princeton University Press, 1996), xxii. On Holism as a component of biocentrism, see below.

14. Like I, Eberhard Roters was grappling with this problem shortly before his death in 1994, indeed we spoke about it briefly when I told him about my dissertation project in Berlin in 1991. In writing about Thomas Ring, he referred to "Rings Auffassung, die mit den entelechisch und morphologisch intendierten lebensphilosophischen Lehrmeinungen Hans Drieschs und Ludwig Klages' unterfüttert ist..." (p. 240). Concluding his essay on Hannah Höch's role as an "eigenständigen spirituellen Vermittlerin" of a certain circle of artists, he wrote:

... was sie aber miteinander verbindet, ist ihre allgemeine biologisch-kosmische Ausrichtung, die zwischen moderner Naturwissenschaft und der Schicksalhaftigkeit menschlicher Bestimmung, zwischen dem Positivismus der experimentellen Forschung und der Autonomie des Geistes eine transmittierende Vermittlung und gleichsam einen "dritten Weg" qua künstlerisches Denken zu bahnen sucht. Salomo Friedlaender, Arthur Segal, Hans Arp, Theo van Doesburg, Laszlo Moholy-Nagy, Raoul Hausmann -- so unterschiedlich und zum Teil sogar unvergleichbar diese Künstler in ihrem Werk sind, so sehr sind sie doch in der Interessenlage ihrer künstlerischen Neugier zwischen Relativitätstheorie, Psychoanalyse, Astrophysik, Gestaltpsychologie, Empiriokritizismus und Lebensphilosophie im Spannungsfeld zwischen Technik und eigenem mystischen Erlebnis in künstlerischer Vision weltanschaulich miteinander verbunden. Dafür habe ich hier den von Ring verwendeten zusammenfassenden Begriff "Biosophie" generell einzuführen versucht, der das alles zwar nicht exakt auf einen Nenner zu

- bringen vermag, aber doch so etwas wie einen gemeinsamen Schwingungshof bezeichnet. (p. 247)
 In: *Hannah Höch, Eine Lebenscollage* (Stuttgart: Gerd Hatje, 1995), 247. Roters does not mention Ernst Fuhrmann as the originator of the term.
15. Ernst Bloch, "Über Naturbilder seit Ausgang des Neunzehnten Jahrhunderts" (1927), in Bloch, *Literarische Aufsätze* (Frankfurt/Main: Suhrkamp, 1965), 452-3.
16. August Wiedmann, *Romantic Roots in Modern Art* (Old Woking, Surrey: Gresham, 1979), 3.
17. From the diaries of Paul Klee, no. 941, 1914, quoted in Jürgen Glaesemer, "Klee and German Romanticism." In: Caroline Lanchner, ed., *Paul Klee* (New York: MOMA, 1995: 65.
18. Max Scheler, *Wesen und Formen der Sympathie* (1913) Second edition 1922. (Berne: Francke, 1973), 82-104. Bloch, "Über Naturbilder," 453. Scheler cites Hans Driesch as the thinker to see this "cosmic sympathy" as a "Zeichen überpersonaler Ganzheit" (p. 82), a "subjektiver Bewusstseinsindex ... für den metaphysischen Bestand der Einheit alles Lebendigen." (p. 85) On Scheler see Elenor Jain, *Das Prinzip Leben: Lebensphilosophie und ästhetische Erziehung* (Frankfurt/Main: Peter Lang, 1993), 120-21.
19. Scheler, *Wesen und Formen der Sympathie*, 104.
20. Raoul Francé, *Plasmatik: Die Wissenschaft der Zukunft* (Stuttgart: Walter Seifert, 1923). On *Plasma* as a more scientific version of Bergson's *élan vital*, Driesch's *Entelechie*, etc., see below.
21. Niles R. Holt, "Ernst Haeckel's Monistic Religion," *Journal of the History of Ideas* 32, no. 2 (April-June 1971): 267. As Driesch himself wrote of his relations with Bergson after having met him and spoken with him in 1911, "[i]n vielen Dingen waren wir ja gleicher Ansicht, wenn ich auch seinem 'Indeterminismus' reserviert gegenüberstand." Hans Driesch, *Lebenserinnerungen* (Basel: Ernst Reinhardt, 1951), 146. Scheler (and others) would include Simmel on this list as well. (*Wesen und Formen der Sympathie*, 85) Kurt Bayertz, "Biology and Beauty: Science and Aesthetics in *Fin-de-siècle* Germany," in: Mikuláš Teich and Roy Porter, eds., *Fin de siècle and its Legacy* (Cambridge: Cambridge University Press, 1990), 291.
22. Klages, "Mensch und Erde," in: Klages, *Mensch und Erde. Elf Abhandlungen* (Stuttgart: Alfred Kröner, 1973), 10, 12.

23. Martin Heidegger, "The Question Concerning Technology" in: Heidegger, *Basic Writings* David Farrell Krell, ed. (New York: Harper and Rowe, 1977), 315.

24. Bloch, "Über Naturbilder," 455. Bloch writes elsewhere about Edgar Dacqué's concern with the prehistoric. On this, see below.

25. Ernő Kállai, "Kunst und Technik," *Sozialistische Monatshefte* 37, no. 11 (November 1931): 1102.

26. See Hans-Joachim Lieber, *Kulturkritik und Lebensphilosophie* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1974).

27. See Jackson Lears, *No Place of Grace: Antimodernism and the Transformation of American Culture 1880-1920* (New York: Pantheon Books, 1981). While some aspects of Lears' construction, especially the "martial ideal" and the Catholic revival have nothing to do with what is being discussed here, others, such as educational reform and anti-industrialism, do. As Sherrye Cohn notes, "Transcendentalism is Romanticism in its American guise." Cohn, *Arthur Dove: Nature as Symbol* (Ann Arbor: UMI Research Press, 1985), 2. On the German Romantic origins of American Transcendentalism, see Cohn, 11 and Octavius Brooks Frothingham, *Transcendentalism in New England: A History* (New York: Putnam and Sons, 1876).

28. Giovanni Vattimo, *The End of Modernity: Nihilism and Hermeneutics in Postmodern Culture* (Baltimore: The Johns Hopkins University Press, 1988). On the anti-humanism inherent in the biocentric world view, see, e.g., Luc Ferry, *The New Ecological Order*, Carol Volk, trans. (Chicago: The University of Chicago Press, 1995). See also Raymond Dominick III, *The Environmental Movement in Germany: Prophets and Pioneers 1871-1971* (Bloomington: Indiana University Press, 1992), Part One, "Origins."

29. See, e.g., Lieber, *Kulturkritik und Lebensphilosophie*, Jain, *Das Princip Leben*, 51ff, and Thomas Kluge, *Gesellschaft, Natur, Technik. Zur lebensphilosophischen und ökologischen Kritik von technik und Gesellschaft* (Opladen: Westdeutscher Verlag, 1985). Kluge focuses on Oswald Spengler's work in this regard.

30. Quoted in Wolfgang R. Krabbe, *Gesellschaftsveränderung durch Lebensreform: Strukturmerkmale einer sozialreformerischen Bewegung im Deutschland der Industrialisierungsperiode* (Göttingen: Vandenhoeck & Ruprecht, 1974), 14-15.

31. *Lebensreform* is defined variously. In a narrower sense, it is usually seen as including vegetarianism and/or health food, land reform, the gymnastics and sport revival, naturopathy,

the housing reform movement, *Kleidungsreform*, nudism, and the anti-vivisectionist movement. In a wider sense, it also includes the aesthetic education movement (*Kunsterziehungsbewegung*) and the general *Schulreformbewegung*, the Youth Movement, the temperance movement, the *Ausdruckstanzbewegung* and Anthroposophy. For a discussion of the definition of "Lebensreform," see Giselher Spitzer, *Der deutsche Naturismus. Idee und Entwicklung einer volkserzieherischen Bewegung im Schnittfeld von Lebensreform, Sport und Politik* (Ahrensburg bei Hamburg: Verlag Ingrid Czwalina, 1983), 12-17. For a discussion of the narrower and wider senses of the term, see Krabbe, *Gesellschaftsveränderung durch Lebensreform*, 12-13, 171-2. Krabbe dates the widespread use of the term "Lebensreform" to the early 20th century, though it first crops up in 1896. (p. 12) On the Garden City Movement and *Lebensreform*, see Kristiana Hartmann, *Deutsche Gartenstadtbewegung: Kulturpolitik und Gesellschaftsreform* (Munich: Heinz Moos Verlag, 1976), 8. On the common origins of *Lebensphilosophie*, the *Jugendbewegung*, and the *Schulreformbewegung* (or *pädagogische Reformbewegung*, as he puts it), see Bollnow, *Die Lebensphilosophie* (Berlin: Springer-Verlag, 1968), 9. See also Wolfgang Scheibe, *Die Reformpädagogische Bewegung 1900-1932: Eine einführende Darstellung* (Weinheim/Basle: Beltz Verlag, 1978).

32. Franz Sawicki, "Die Lebensphilosophie" in: *Lebensanschauungen moderner Denker*. Volume Two. *Die Philosophie der Gegenwart* (Paderborn: Ferdinand Schöningh, 1952), 198.

33. Ferdinand Fellmann, *Lebensphilosophie: Elemente einer Theorie der Selbsterfahrung* (Reineck bei Hamburg: Rowohlt, 1993), 27-8.

34. Kállai, "Kunst und Wirklichkeit," *Sozialistische Monatshefte* 37, no. 10 (October 1931): 998.

35. Fellmann, *Lebensphilosophie*, 198-9. It seems that Heidegger's *Seiende* (Being) is a concept not too distant from either *Leben* or *élan vital*.

36. For a good discussion of the origins of "primitivism" in Modernism, see Gill Perry, "Primitivism and the Modern," Part One of Charles Harrison, Francis Frascina and Gill Perry, *Primitivism, Cubism, Abstraction: The Early Twentieth Century* (New Haven: Yale University Press, 1993), esp. 34-6.

37. Georg Lukács, "Reification and the Consciousness of the Proletariat," *History and Class Consciousness: Studies in Marxist Dialectics* (Cambridge Mass.: The MIT Press, 1971), 136-7.

38. Ludwig Klages, *Der Geist als Widersacher der Seele* [1929] Third ed. (Munich: Barth, 1954).

39. Most famously in his 1953 lecture "The Question Concerning Technology." On Bloch and Lukács, see below. For positive valuations of Klages, see the journal devoted to Klages studies, *Hestia*, published in Bonn.

40. Fellmann, *Lebensphilosophie*, 155.

41. Richard Hinton Thomas, "Nietzsche in Weimar Germany -- and the Case of Ludwig Klages," in Anthony Phelan, ed., *The Weimar Dilemma: Intellectuals in the Weimar Republic* (Manchester: Manchester University Press, 1985), 79-80.

42. On Francé as an environmentalist pioneer (written from a völkisch ecological position), see Gerhard Tenschert's introduction to the second edition of Francé, *Die Entdeckung der Heimat* (Asendorf: MUT-Verlag, 1982). C.f. for example Francé's critique of the speed of German industrialization, and of deforestation in France in *Plasmantik*, 156-7. See Klages' "Mensch und Erde," 10, 12. On Klages as a pioneer environmentalist, see Roland Müller, *Das verzwestete Ich -- Ludwig Klages und sein philosophisches Hauptwerk 'Der Geist als Widersacher der Seele'* (Bern and Frankfurt/Main: Herbert Lang, 1971), 200-1, Wilfried Kuckartz, "Ludwig Klages als Prophet der drohenden Umweltkatastrophe," *Hestia* (1982-83): 67-79; and Jain, *Das Prinzip Leben*, 85-7. On Lessing, see the quotation at the start of this chapter; Fellmann, *Lebensphilosophie*, Chapter 3 and Jain, *Das Prinzip Leben*. On Spengler, see, e.g., Kluge, *Gesellschaft, Natur, Technik*. On the artists and critics, see below. On the history of environmentalism in Germany, see Raymond H. Dominick III, *The Environmental Movement in Germany. Prophets and Pioneers 1871-1971* (Indianapolis and Bloomington: Indiana University Press, 1992).

43. Oswald Spengler, *Der Untergang des Abendlandes* (Vienna and Munich, 1918, 1919, and 1923). On the publication history of Spengler's book, see Kluge, *Wissenschaft, Natur, Technik*, 280.

44. Kluge, *Wissenschaft, Natur, Technik*, 13.

45. Heidegger, "The Question Concerning Technology." On Spengler's system, see the chart in Kluge, *Wissenschaft, Natur, Technik*, 52.

46. *Ibid.*, 309.

47. Francé, *Bios*, 56-7. Quoted by Tenschert in his introduction to Francé, *Die Entdeckung der Heimat*, 10.

48. See, e.g., Francé, *Plasmantik*, 156-7.

49. Raoul Francé, *Denkmäler der Natur* (Leipzig: T. Thomas, 1910); *Die Entdeckung der Heimat* (Stuttgart: Kosmos, 1925); *Richtiges Leben* (Leipzig: Voigtländer, 1924), *So musst du Leben!* (Dresden: Carl Reissner, 1930). On Darré see Anna Bramwell, *Blood and Soil: Walter Darré and Hitler's 'Green Party'* (Bourne End, U.K.: Bucks, 1985). On Klages' and Francé's politics -- while the former refused Nazi party membership, the latter did not -- see below.
50. Anna Bramwell, *Ecology in the 20th Century: A History* (New Haven and London: Yale University Press, 1989), 13-14.
51. Michael Grossheim, *Ludwig Klages und die Phänomenologie* (Berlin: Akademie Verlag, 1994), 1.
52. Bramwell, *Ecology in the Twentieth Century*, 182-3. On Klages and German environmentalism, see also Dominick, *The Environmental Movement in Germany*, 19-20.
53. Harrington, *Reenchanted Science*, 32. Anyone who has ever tried to read Klages' *Der Geist als Widersacher der Seele* will know that it is many things, but "pop philosophy" it certainly is not. On Klages and the political Right, see below. Note that this is one of the few criticisms I can make of this excellent book.
54. Thomas, "Nietzsche in Weimar Germany," 87.
55. One of the rare -- if strong -- examples of outright anti-Semitism in Klages' voluminous writings dates from 1940, in his introduction to Alfred Schuler's works. Fellmann, *Lebensphilosophie*, 155-6. See also Evelin Priebe, *Angst und Abstraktion: Die Funktion der Kunst in der Kunsttheorie Kandinskys* (Frankfurt/Main: Peter Lang, 1986), 164-5. Compare Roderich Huch's memoirs, in which he discusses Klages' complex attitudes towards Jews such as Stefan George and Karl Wolfskehl. Roderich Huch, *Alfred Schuler, Ludwig Klages und Stefan George. Erinnerungen an Kreise und Krisen der Jahrhundertwende in München-Schwabing* (Amsterdam: Castrum Peregrini Presse, 1973), 6ff, especially 11.
56. Thomas, "Nietzsche in Weimar Germany -- and the Case of Ludwig Klages," 84. This was -- one must add -- an admiration based on a misreading.
57. Fellmann, *Lebensphilosophie*, 155.
58. Thomas, "Nietzsche in Weimar Germany -- and the Case of Ludwig Klages," 90.

59. See Konrad Eugster, *Die Befreiung vom anthropozentrischen Weltbild: Ludwig Klages' Lehre vom Vorrang der Natur* (Bonn: Bouvier, 1989). On Haeckel's "anti-anthropism," see above,

60. Adolf Behne, "Biologie und Kubismus," *Die Tat* (1916): 705. See also p. 58 of *Die Wiederkehr der Kunst*.

61. Raoul Francé, *Der Organismus. Organisation und Leben der Zelle* (Munich: Drei Masken, 1928), VII.

62. See Fellmann, *Lebensphilosophie*, 29-30. For a Marxist view of organic theories of society, see Heinz-Georg Marten, *Sozialbiologismus. Biologische Grundpositionen der politischen Ideengeschichte*. (Frankfurt/Main: Campus, 1983). Typically, the author assumes that all social biology is meant as a capitalist legitimation device with a potentially racist outcome. As they do not fit neatly into Marten's schema, Anarchist and Leftist social biological figures such as Kropotkin and Geddes are, needless to say, not dealt with.

63. Robert Wojtowicz, *Lewis Mumford and American Modernism: Eutopian Theories for Architecture and Urban Planning* (Cambridge: Cambridge University Press, 1996), 11.

64. On this, see Alfred Kelly, *The Descent of Darwin: The Popularization of Darwinism in Germany, 1860-1914* (Chapel Hill: University of North Carolina Press, 1981), Chapter 6, "Social Darwinism and the Popularizers"; and Peter J. Bowler, *The Non-Darwinian Revolution: Reinterpreting a Historical Myth* (Baltimore: Johns Hopkins University Press, 1988), Chapter 7, "Social Darwinism". Kropotkin's *Mutual Aid* was written in England as a series of articles between 1890 and 1896. See: Peter Kropotkin, *Mutual Aid: A Factor of Evolution*. Introduction by George Woodcock. (Montreal: Black Rose Books, 1989). This edition reprints as an appendix Huxley's 1888 essay "The Struggle for Existence in Human Society" on pp. 329ff. Spencer first makes such an argument in 1865 in his *Social Statics*, in which he cited "the stern discipline of nature which eliminates the unfit." Quoted in Donald Gordon, *Expressionism: Art and Idea* (New Haven: Yale University Press, 1987), 5. Note that Spencer's thinking was complex in that he also saw nature as "a benevolent, ordered state...." Quoted in Abbie Ziffren, "Biography of Patrick Geddes" in: Marshall Stalley, ed., *Patrick Geddes: Spokesman for Man and the Environment* (New Brunswick, N.J.: Rutgers University Press, 1972), 7.

65. Geddes and J. Arthur Thomson, *Introduction to Evolution* (London: Williams and Norgate, 1911), ix. Quoted in: Wojtowicz, *Lewis Mumford*, 11.

66. B. T. Robinson quoted in: Bramwell, *Ecology in the 20th Century*, 77-80. On Geddes and Kropotkin, see Volker M. Welter, "The Geddes Vision of the Region as City: Palestine as a 'Polis'," in: Jeannine Fiedler, ed., *Social Utopias of the Twenties: Bauhaus, Kibbutz and the Dream of the New Man* (Dessau: Bauhaus Dessau Foundation and Tel Aviv: Friedrich-Ebert Foundation, 1995), 72-9. See also Stalley, ed., *Patrick Geddes*. On Geddes, Meyer and Mumford, see Chapter Four.

67. On German *fin-de-siècle* thinking as heavily biologicistic, see Gunter Mann, "Ernst Haeckel und der Darwinismus: Popularisierung, Propaganda und Ideologisierung," *Medizinhistorisches Journal* 15 (1980): 282-3. On Haeckel's biologicism, see also Daniel Gasman, *The Scientific Origins of National Socialism: Social Darwinism in Ernst Haeckel and the German Monist League* (London: Macdonald and New York: American Elsevier Inc., 1971), 35. On Freud's psychology as "crypto-biological," see Frank J. Sulloway, *Freud, Biologist of the Mind: Beyond the Psychoanalytic Legend* (New York: Basic Books, 1979). On the enormous popularity of Ernst Mach's "biological positivist" view of the world, see Pauline Mazumdar, *Species and Specificity: An Interpretation of the History of Immunology* (Cambridge: Cambridge University Press, 1995), 169-70. For an acknowledgement of Nietzsche's biologicism, and a discussion of the defence of the view that he was biologicistic in the face of Heidegger's denial of this, see Bayertz, "Science and Aesthetics in *Fin-de-siècle* Germany," 291 and endnote 37.

68. See Corona Hepp, *Avantgarde: Moderne Kunst, Kulturkritik und Reformbewegungen nach der Jahrhundertwende* (Munich: DTV, 1987), 58-63 and Gordon, *Expressionism*, Chapter One. On Spengler's reception by the Nazis, see Kluge, *Wissenschaft, Natur, Technik*, Part 2. On Chamberlain as a precursor of Nazi racist theory, see Enzo Collotti, "Nationalism, Anti-Semitism, Socialism and Political Catholicism as Expressions of Mass Politics in the Twentieth Century" in: Teich and Porter, eds., *Fin de Siècle and its Legacy*, 85.

69. Francé, *Der Organismus*, vii. Francé did not note the irony in a situation in which "objective" biologicistic reasoning could result in either Spencerian Social Darwinism or Kropotkinian cooperative Anarchism (for which he had sympathy). For an account of Francé's intellectual origins, see below. His wife, Annie (Francé-)Harrar lists Francé's most important scientific achievements as his description of the soil ecosystem or *Edaphon*, his suggestions for humus development through composting, and his conception of *Biotechnik*, which is discussed in Chapter Four. She reports that he was awarded an honorary doctorate for his soil ecology work by Jefferson-Lincoln University in Chicago in 1928. Annie Francé-Harrar, *So war's um Neunzehnhundert: Mein fin de siècle* (Munich: Albert Langen, 1962), 24, 31, 207-16, 220.

70. Francé, *Der Organismus*, VII. On the announcement in 1920, see below.

71. Raoul Francé, *Die Welt als Erleben: Grundriss einer objektiven Philosophie* (Dresden: Alwin Huhle, 1923), 8. On the importance of Kant and Schopenhauer to Francé, see Francé, *Zoësis: Eine Einführung in die Gesetze der Welt* (Munich: Franz Hanfstaengl, 1920), 7. Also: Francé, *Plasmatik*, 17. Francé distinguishes his phenomenology from Husserl's which he criticizes for not recognizing the "biological content" of consciousness. See *Die Welt als Erleben*, 26.

72. W. T. Jones, *Kant and the Nineteenth Century*. Second edition. (New York: Harcourt Brace Jovanovich, 1975), 202. For a (rare) précis of "empiriocritical" epistemology within a relevant art historical context, see Andreas Haus, *Moholy-Nagy: Fotos und Fotogramme* (Munich: Schirmer/Mosel, 1978), 58-60. On Mach and Avenarius as sources for Francé's line of thinking, see *Bios*, vol. 1, 34. On Avenarius and Mach as "Vorläufer der Biozentrik," see *Die Welt als Erleben*, 45-8.

73. Spengler, *The Decline of the West*, 8.

74. On the possible origin of Heidegger's concept of Being-in-the-world in von Uexküll's *Umwelt*, see Harrington, *Reenchanted Science*, 53-4.

75. On "Psychobiology" being coined by O. Kohnstamm, and for the definition of the term, see Adolf Wagner, *Geschichte des Lamarckismus: Als Einführung in die Psycho-Biologische Bewegung der Gegenwart* (Stuttgart: Franckh'sche Verlagshandlung, n.d. [1909]), 169. On Kohnstamm's ideas, see Wagner, 178-81. For Francé's version of "psychobiology," see his *Der Weg zu mir*, 186-7 and *Die Welt als Erleben*, 118. On the development of Francé's Psychobiology and the "school" that developed around it in Munich early in the century, see *Zoësis*, 19. Adolf Wagner sees the "psycho-biologische Bewegung" as a second, higher stage of "die heutige lamarckistische Bewegung" in his *Geschichte des Lamarckismus*, 169. On Francé in this book, see 199-209. According to Sulloway, Freud's thinking was also "psychobiological." *Freud, Biologist of the Mind*, 4. We shall see in Chapter Three that Raoul Hausmann was an adherent of philosopher Ernst Marcus' radically psychobiological position.

76. Wagner sees Francé and A. Pauly as the most important figures of the "movement." "Mit diesen beiden Gelehrten setzte die Bewegung bewusst und folgenswer ein; von diesem Augenblicke an konnte die nicht mehr ignoriert werden, musste die zeitgenössische Biologie ... sich mit ihr abzufinden suchen. Und nicht nur der engere Neolamarckismus, sondern insbesondere die Psycho-Biologie datiert ihren Ursprung recht eigentlich von dem Eingreifen dieser beiden Autoren." (Wagner, *Geschichte*

des Lamarckismus, 133) On Paul, see Wagner, 102ff. On Francé's founding of the *Zeitschrift für den Ausbau der Entwicklungslehre*, later renamed *Archiv für Psycho-Biologie* in 1907, see Francé, *Zoësis*, 19; Wagner, *Geschichte des Lamarckismus*, 208-9; and R.R. Roth, "The Foundation of Bionics," *Perspectives in Biology and Medicine* 26 (1983): 237. On Psychobiology as a "movement," see endnote 64.

77. Francé, *Zoësis*, 18-19. For an account of Driesch's philosophy as "ganz ähnlich" to Francé's biocentrism, see Francé, *Die Welt als Erleben*, 130-2. Wagner writes: "Wenn zwischen der Psycho-Biologie und Driesch eine Annäherung stattfinden sollte, so wäre das ja sehr zu begrüßen..." (*Geschichte des Lamarckismus*, 182) The term *Entelechie* (English "entelechy") refers to an organic system or series of events; i.e. an entity. In English, see, e.g., Driesch, *The Science and Philosophy of the Organism* (Aberdeen: Aberdeen University Press, 1909). Thanks to Hilmar Frank for originally bringing Driesch to my attention.

78. Rudolf Eisler, *Philosophen-Lexikon* [1912, p. 371] in *Deutsches Biographisches Archiv*, neue Folge no. 387 (Munich: K.G. Saur, 1982). Wagner defines "Psychovitalismus" almost identically to the definition of "Psychobiologie" he himself gives: "Vitalismus wird ... nicht anders bedeuten, als eine naturphilosophische Betrachtungsweise, welche von der höchsten Manifestationsstufe -- dem Leben -- ausgeht und diese als das zuerst zu Analysierende, als den Schlüssel zu allem anderen betrachtet. Da die höchste Manifestation des Lebens wiederum in dem "Innenleben", in dem "psychischen" Erscheinungen gipfelt, so wird jeder künftige Vitalismus notwendig ein "psychistische" sein müssen. Und um ihn in diesem Sinne von älteren Fassungen zu unterscheiden, wohl der Ausdruck Psycho-Vitalismus empfehlen." (*Geschichte des Lamarckismus*, 24; 169.

79. Ernst Marcus, *Das Problem der exzentrischen Empfindung und seine Lösung* (Berlin: Verlag der Sturm, 1918), 9-10.

80. Erben in Karl Ernst Osthaus. *Leben und Werk* (Rechlinghausen: Aurel Bongers, 1971), 101.

81. Francé, *Die Welt als Erleben*, 53. See also Francé, *Bios* and *Das Buch des Lebens: Ein Weltbild der Gegenwart* (Berlin: Ullstein, 1924), esp. 25. See: Raoul Francé, *Das Edaphon* (Stuttgart: Franck, 1921), and *Das Leben im Ackerboden* (Stuttgart: Kosmos, c. 1923). For a history of the ecosystem concept, see Frank Benjamin Golley, *A History of the Ecosystem Concept in Ecology: More Than the Sum of the Parts* (New Haven: Yale University Press, 1993). Though he acknowledges that "the German foundation for ecosystem studies was firmly rooted both philosophically and technically" (p. 174), Golley does not accept "ecosystem" (a word coined in 1935 by Arthur Tansley;

see p. 8), as a restatement of the *Biozönose*, developed by Karl Möbius in 1877, biotope, Holocoen (p. 40) or any other equivalent European concepts, characterizing its development instead as "largely an American tale." (p. 2) He contradicts himself on page 40, however, where he acknowledges that "Holocoen and ecosystem are synonyms."

82. Francé, *So musst Du leben!*, 166-7.

83. Francé, *Die Pflanze als Erfinder* (Stuttgart: Kosmos, 1920), 22.

84. Lessing, *Untergang der Erde im Geist*, 457.

85. See Francé, *Harmonie in der Natur* (Stuttgart: Kosmos, 1926).

86. Francé, *Zoësis*, 58.

87. Donna Jean Haraway, *Crystals, Fabrics, and Fields: Metaphors of Organicism in Twentieth-Century Developmental Biology* (New Haven: Yale University Press, 1976), 57. See also Harrington, *Reenchanted Science*.

88. Francé, *Die Welt als Erleben*, 15. On the introduction of this philosophy, see *Zoësis*, 10.

89. Francé, *Die Welt als Erleben*, 32-33.

90. On Einstein, see pp. 114-6 and on Nietzsche as a "forrunner" of biocentrism, see p. 22 of *Die Welt als Erleben*.

91. Huberta von Bronsart, *Die Lebenslehre der Gegenwart. Einführung in die objektive Philosophie* (Stuttgart: Walter Seifert, 1924), 71-2.

92. Francé, *Die Welt als Erleben*, 29.

93. Though Sale's version does not have as strong an emphasis on ethnicity. Kirkpatrick Sale, *Dwellers in the Land: The Bioregional Vision* (San Francisco: Sierra Club Books, 1985), esp. Chapter Four, "Dwellers in the Land." Like most almost all ecological theorists, Sale is unaware of his predecessors.

94. Francé, *Die Kultur von Morgen*, 49.

95. Francé, *So musst du Leben!*, 170. In his copy of this book Mies marked the passage in which Francé pointed out which readings to take up in order to inform oneself of the many practical aspects of Francé's *Lebenslehre* (p. 170).

96. Francé, "Vorwort," *Bios*, vol. 1, unpag. and *Die Welt als Erleben*, 1.
97. On Kropotkin, See e.g., Francé, *Die Welt als Erleben*, 29; *Das Buch des Lebens*, 268; and *Bios*, vol. 2, 213. On Spencer, see *Die Welt als Erleben*, 42-3. It is typical that Wolschke-Bulmahn would jump to the conclusion that Francé was a Social Darwinist, even though Francé's writings indicate that he was more Kropotkinian than Social Darwinist. See Joachim Wolschke-Bulmahn, *Auf der Suche nach Arkadien* (Munich: Minerva, 1990), 90-1.
98. On Kropotkin's positive attitude towards a technology harnessed for the human good, see Ulrike Heider, *Anarchism: Left, Right, and Green* (San Francisco: City Lights Books, 1994), 18.
99. Francé, *Plasmantik*, 155-6.
100. See his critique of Spengler's idea of the "Decline of the West." Raoul Francé, *Die Kultur von Morgen: Ein Buch der Erkenntnis und der Gesundung* (Dresden: Reissner, 1922), 139. Though he criticized it in many respects, Francé considered Spengler's *Der Untergang des Abendlandes* to be important because of its attempt to found a "biologisches Geschichtswissenschaft." Francé, *Zoësis*, 21-3. On Spengler's critique of technology, see Kluge, *Wissenschaft, Natur, Technik*, Part 1.
101. Francé, *Die Pflanze als Erfinder*, 72. Interestingly enough Francé does not discuss Klages in his books. On Spengler's position concerning technology as a "Faustian" pact, see Ingeborg Güssow, "Kunst und Technik in den 20er Jahren," in: Helmut Friedel, ed., *Kunst und Technik in den 20er Jahren: Neue Sachlichkeit und Gegenständlicher Konstruktivismus* (Munich: Städtische Galerie im Lenbachhaus, 1980), 34. On Spengler, the conservative critique of technology in Weimar Germany, and its later confluence with National Socialism, see Kluge, *Gesellschaft, Natur, Technik*.
102. Ibid.
103. For an account of Francé's pioneering role in the development of biotechnology (one of the few areas in which a secondary literature has developed on him), see R.R. Roth, "The Foundation of Bionics," *Perspectives in Biology and Medicine*, 26 no. 2 (Winter 1983): 229-42 and Robert Bud, *The Uses of Life: A History of Biotechnology* (Cambridge: Cambridge University Press, 1995), 60-3.
104. Francé, *Die Kultur von Morgen*, 42.
105. See von Bronsart, *Die Lebenslehre der Gegenwart*, 88-9.

106. Von Bronsart, *Die Lebenslehre der Gegenwart*, 88.

107. Ibid.

108. See, e.g., Francé, *Das Buch des Lebens*, 460-70, and Francé, *Harmonie in der Natur*, 32-40. For a summary of "objektive Kunstlehre" see Francé, *Die Welt als Erleben*, 30-1. On Francé's own art, see Rudolf Engel-Hardt, *Francé als Grafiker. Ein Weg zum 'Wirklichen Naturbild'* (Stuttgart: Walter Seifert, 1925).

109. Writing from a leftist-biocentric position, Hausmann, as far as I can tell, is the only one of the Weimar intellectuals to point out the socially conservative, indeed dangerous implications of Francé's biologism. See his review of *Die Kultur von Morgen*, "Intellektualismus, Gesellschaft und Gemeinschaft," *Die Aktion* (15 July 1923): 347-51 and "Ausblick," G no. 3 (June 1924): 14-17. On this, see also below and Chapter Four. Karl Popper later criticized Holism and Organicism as types of biologicistic social engineering schemes which led to totalitarianism. See Karl Popper, *The Poverty of Historicism* (London: Routledge and Kegan Paul, 1957), 17-19. See especially his "Critique of Holism," 76-83. Lessing's was, by contrast, an anti-totalizing lebensphilosophische viewpoint. Jain, *Das Prinzip Leben*, 49-50.

110. Mies and others might even have read Francé's critique of Expressionist art as a reflection of the artists' desperate clinging to a mythical self, of a "Souveränen Willensübersteigerung," a negation of the "true" goal of art which should be to represent the harmony in natural systems. (This no doubt reflects Ernst Mach's dictum that "das Ich ist unrettbar." Quoted in Pauline Mazumdar, *Species and Specificity*, 170.) While perhaps dismayed by Francé's amateurish art criticism, Mies might have been gratified by his praise for the design of Hermann Muthesius and his support for the skyscraper as an "optimale Lösung der Raumfrage in der Weltstadt." See "Expressionismus als Fremddidee" in *Das Buch des Lebens*, 460-2 and 521-3.

111. On this hoped-for world revolution, see Lukács, *History and Class Consciousness*, xiii.

112. Indeed, Hausmann, like his mentor Johannes Baader, was just such a Haeckelian Monist. See Timothy O. Benton, *Raoul Hausmann and Berlin Dada* (Ann Arbor: UMI Research Press, 1987), 8-9.

113. Peter Nisbet, *El Lissitzky 1890-1941 Exh. cat.* (Cambridge, Mass.: Busch-Reisinger Museum, 1987), 30.

114. For more discussion of Francé's connections to the art world, see Chapter Four. This is a topic which will have to be dealt with elsewhere, however.

115. Francé, *Die Welt als Erleben*, 24.

116. Paraphrased by and quoted in: Sixten Ringbom, "Paul Klee and the Inner Truth to Nature," *Arts Magazine* 52 (September 1977): 115. Ringbom is paraphrasing from Stadelmann's *Unsere Zeit und ihre neue Kunst* (Berlin: Der Zirkel Architekturverlag, 1916), 4, 18, 21. The original reads "Die grosse Errungenschaft des neuen Zeitgeistes ist das biologische Denken." (p. 4) While he does not provide a bibliography or notes, Stadelmann seems to have been informed by Jakob von Uexküll's writing, popular with figures such as Adolf Behne and Theo von Doesburg around 1916.

117. Kurt Graeser, "Pflanzen-Psychologie," *Blätter des Deutschen Monistenbundes* 3 no. 20 (February 1908): 36. Graeser seems to be referring to the circle of those interested in "Psychobiologie" or plant psychology around the Monist Raoul Francé. C.f. Francé, *Zoësis*, 19-20.

118. Wagner, *Die Geschichte des Lamarckismus als Einführung in die Psycho-Biologische Bewegung der Gegenwart*, IV. Later on it becomes clear that he was thinking first and foremost of what he terms the "Psycho-Lamarckian" aspect of Neo-Lamarckism. (p. 268)

119. Rudolf Eisler, *Philosophen-Lexikon* [1912, p. 371] in *Deutsches Biographisches Archiv*, neue Folge no. 387 (Munich: K.G. Saur, 1982). Von Bronsart characterizes Francé's "Objective Philosophy" as neo-Lamarckian and describes Francé's book *Das Leben der Pflanze* (1904-07) as "das erste Lamarckistische Handbuch der Botanik." *Die Lebenslehre der Gegenwart*, 102.

120. Lessing, *Untergang der Erde am Geist*, 403.

121. There is not total agreement about exactly which philosophers were "philosophers of life," I have drawn on several sources in drawing up this tentative list, including Bollnow, *Die Lebensphilosophie*; Sawicki Vol., 2; Jain, *Das Prinzip Leben*; Fellmann, *Lebensphilosophie*. Not too surprisingly, some have seen this category as far too diverse. For a summary of this criticism, see Theodore Plantinga, *Historical Understanding in the Thought of Wilhelm Dilthey* (Toronto: University of Toronto Press, 1980), 70-1. Note that Fellmann, following Bollnow, does not so much see *Lebensphilosophie* as a revival of Romanticism, but simply labels aspects of Romanticism as the first epoch of *Lebensphilosophie*. (Fellmann, 27-28 and Bollnow, 3-5) At least one author, Schnädelbach, sees *Lebensphilosophie* as a post-World War One phenomenon, typified

by the work of Ludwig Klages. See: Herbert Schnädelbach, *Philosophy in Germany 1831-1933* Eric Matthews, trans. (Cambridge: Cambridge University Press, 1984). On the question of the post-war generation, see below. Schnädelbach's views are referred to in Harrington, *Reenchanted Science*, 32. On Nietzsche's conceptions of "nature" and "life" within it, see Daniel W. Conway, "Returning to Nature: Nietzsche's *Götterdämmerung*," in Peter R. Sedgwick, ed., *Nietzsche: A Critical Reader* (Oxford: Blackwell, 1995), 31-52. On *Lebensphilosophie* as first and foremost a kind of epistemology, see Fellmann, *Lebensphilosophie*, 26.

122. Schnädelbach, *Philosophy in Germany 1831-1933*, 139. Schnädelbach's a-biologistic characterization of *Lebensphilosophie* tends to depend on Dilthey's approach, rather than on the more biologistic variants of life-philosophy. See, e.g., Schnädelbach, p. 147. Wilhelm Dilthey is usually included among the *Lebensphilosophen*. (See, e.g., Fellmann, *Lebensphilosophie*, 108ff.) However, as Plantinga points out, Dilthey's "...choice of the term 'life' does not ... reflect the widespread interest in biological matters that is typical of the late nineteenth century. Dilthey, in fact, manifested no special interest in biology and did not use the term 'life' in a biological sense." *Historical Understanding in the Thought of Wilhelm Dilthey*, 74.

123. Bramwell, *Ecology in the 20th Century*, 177.

124. See the bibliography for a selected listing of relevant publications on Nietzsche. The production of the "Nietzsche Industry" is prodigious. On Nietzsche's anti-anthropocentrism, see especially Ferry, *The New Ecological Order*, 79. On his thinking being neither Right nor Left, see Henning Ottmann, "Anti-Lukács: Eine Kritik der Nietzsche-Kritik von Georg Lukács," *Nietzsche Studien* 13 (1984): 576.

125. Joan Stambaugh, *The Other Nietzsche* (Albany: State University of New York Press, 1994), 9.

126. For a listing of *Lebensphilosophen*, see Jain, *Das Prinzip Leben*, 20. On Raoul Francé's views of Eduard von Hartmann, see Francé, *Die Welt als Erleben*, 52, 8, 12, 51-52, 166. On von Hartmann as Haeckel's opponent, see David de Groot, *Haeckel's Theory of the Unity of Nature* (Amsterdam: B.R.Grüner, 1982), 5. On Simmel, see, e.g., Fellmann, *Lebensphilosophie*, 124ff and Jain, *Das Prinzip Leben*, 47-8. On Lessing, See Sawicki, Volume 2, 214 and Jain, *Das Prinzip Leben*, 49-50, 65-8, etc. On Keyserling, see Ute Gahlings, *Sinn und Ursprung: Untersuchungen zum philosophischen Weg Hermann Graf Keyserlings* (Sankt Augustin: Academia Verlag, 1992) and Jain, *Das Prinzip Leben*, 113-17. For an account of what one could dub Keyserling's metaphysical biocentrism, see his "Der natürliche Wirkungskreis," in: *Der Weg*

zur Vollendung. *Mitteilungen der Gesellschaft für freie Philosophie, Schule der Weisheit, Darmstadt* no. 10 (1925): 1-17. On Keyserling and Lebensphilosophie, see Paul Feldkeller, "Bücherschau," *Der Weg* no. 5 (1923): 100-05. On Keyserling's lecture series on "Mensch und Erde" (of which the eighth lecture was to be given by Hans Prinzhorn), see "Chronik der Schule der Weisheit," *Der Weg* no. 12 (1926): 18. Despite the obvious reference to Klages in the title of this lecture series, for Keyserling's mixed views on Klages, see "Bücherschau," *Der Weg* no. 5 (1923): 84-90. For von Uexküll's praise of Keyserling, see von Uexküll, *Bausteine zu einer biologischen Weltbetrachtung*, 50. On Spengler as Lebensphilosoph, see Kluge, *Gesellschaft, Natur, Technik*. On Spranger, see Jain, *Das Prinzip Leben*, 197ff.

127. Francé, *Der Weg zu mir*, 176-7.

128. On this relationship, see Schädelbach, *Philosophy in Germany 1831-1933*, 146-7.

129. *The Harper Dictionary of Modern Thought* (New York: Harper and Rowe, 1988), 898.

130. E. Benton, "Vitalism in Nineteenth-Century Scientific Thought: A Typology and Reassessment," *Studies in the History and Philosophy of Science* 5, no. 1 (1971): 18.

131. Wagner, *Geschichte des Lamarckismus*, 21-2.

132. See Bakhtin, "Contemporary Vitalism" (1927) in: Frederick Burwick and Paul Douglass, eds., *The Crisis in Modernism: Bergson and the Vitalist Controversy* (Cambridge: Cambridge University Press, 1992), 80. Bakhtin distinguished traditional Vitalism from the more sophisticated Vitalism of the fin-de-siècle. He called it "critical Vitalism," and distinguished it from the uncritical Vitalism of the late eighteenth and early nineteenth centuries. In his essay Bakhtin sought to prove, however, that a truly critical Vitalism was impossible, that all Vitalisms are by nature dogmatic, that the basic tenets of Vitalism -- even its critical variety -- must be accepted on faith. Morton O. Beckner, in his article on Vitalism for Paul Edwards, ed., *The Encyclopedia of Philosophy* (New York: MacMillan, 1967), 254, also employs Bakhtin's term "critical Vitalism," including principally Aristotle and Driesch in this category. More recently Michael A. Weinstein has proposed a "Critical Vitalist" philosophy in his book *Structure of Human Life: A Vitalist Ontology* (New York: New York University Press, 1979), ix.

133. On Driesch see the listings in the Bibliography, as well as Bramwell, *Ecology in the 20th Century*, 54ff. On Reinke as a Neo-Vitalist philosopher, see e.g., Sawicki, *Moderne Denker*, Volume 2, 308-9.

134. Krabbe, *Gesellschaftsveränderung durch Lebensreform*, 108. See also p. 172.

135. Burwick and Douglass, Introduction, *Bergson and the Vitalist Controversy*, 1.

136. Before 1982 Freyhofer wrote: "[a]ny intellectual history of the last hundred years will remain incomplete if it does not include an account of vitalism." Intellectual history continues to remain incomplete in this regard. *The Vitalism of Hans Driesch*, 13.

137. On von Uexküll's harmonization of *Entelechie* and *Gen*, see Jakob von Uexküll, *Bausteine zu einer biologischen Weltanschauung. Gesammelte Aufsätze*. Felix Gross, ed. (Munich: F. Bruckmann, 1913), 99. On the *Plasma* see Francé, *Plasmatik*. For Francé's critique of some of these concepts as opposed to his own *Plasma*, see *Plasmatik*, 125.

138. Jain, *Das Prinzip Leben*, 121.

139. Scheler, *Wesen und Formen der Sympathie*, 84.

140. Benton attempts to taxonomize the Vitalist-Mechanist continuum in "Vitalism in Nineteenth-Century Scientific Thought": 18. In discussing typologies in this connection, Rousseau refers to Timothy Lenoir's category of "vital materialism" and notes the breakdown of easy categorizations in the debate. (Rousseau, in Burwick and Douglass, eds., *The Crisis in Modernism*, 45.) The difficulty of taxonomization reflects not only the general confusion as far as the types of Vitalisms are concerned, but also the extent to which Vitalism is distinguishable from Mechanism, and the degree to which Vitalism is identical to varieties of Organicism and Holism. For example, Max Verworn distinguishes three kinds of Vitalism, one of which, "Mechanistic Vitalism," is essentially identical to some Organicisms, and certainly to Holism. He described Mechanistic Vitalism as "the view that ... the life processes rest basically on physico-chemical factors, but the conditions in the living organism are so complex, that they have up to now not been elucidated. These complex conditions which are peculiar to living organisms in contrast to inorganic nature, may for the present call (sic) the life force." Quoted in Pauline M. H. Mazumdar, "The Antigen-Antibody Reaction and the Physics and Chemistry of Life," *Bulletin of the History of Medicine* 48, no. 1 (Spring 1974): 16. Recognizing the overlap between some kinds of Vitalism and systemic-organicist-mechanist views, rather than to mechanism, J. A. Schmoll opposes Vitalism to "Morbidity." (He opposes mechanism to transcendentalism.) Reported by Roger Bauer in his Preface to Roger Bauer, et al., eds., *Fin de Siècle. Literatur und Kunst der Jahrhundertwende* (Frankfurt/Main: Vittorio Klostermann,

1977), X-XI. On Mechanism and Vitalism Rousseau writes: "The point is that both philosophies -- Mechanism and Vitalism -- developed hand in hand, and it is difficult to separate them during the Enlightenment. When one faded, the other blossomed; but neither waned for very long." In Burwick and Douglass, eds., *The Crisis in Modernism*, 32.

141. It was not embraced by his friend Jacob von Uexküll. For examples of the use of the term "Neo-Vitalism" early in the century, see Karl Bräunig, *Mechanismus und Vitalismus* (1907), 64ff and Hans Haustein's "Biologie" column written for the *Sozialistische Monatshefte* of Berlin during the mid 1920s, e.g. vol. 63, no. 3 (March 1926), 180. On this relationship, see Schnädelbach, *Philosophy in Germany 1831-1933*, 146-7.

142. *Oxford English Dictionary*, Second edition, vol. 9 (Oxford: Clarendon Press, 1989), 1001.

143. For a history of the concept of Monism, see Horst Hillermann, "Zur Begriffsgeschichte von 'Monismus'," *Archiv für Begriffsgeschichte* 20 (1976): 215-35.

144. *Ibid.*, 229.

145. Rollo Handy, "Ernst Heinrich Haeckel" in Paul Edwards, ed., *The Encyclopedia of Philosophy* (New York: MacMillan, 1967), 399.

146. *Ibid.*, 400.

147. Quoted in Kelly, *The Descent of Darwin*, 24.

148. Ernst Haeckel, *Monism as Connecting Religion and Science. The Confession of Faith of a Man of Science* (London: Adam and Charles Black, 1894), 3.

149. Handy, "Ernst Heinrich Haeckel," 399. On Haeckel's ambivalence: Ruth G. Rinard, "The Problem of the Organic Individual: Ernst Haeckel and the Development of the Biogenetic Law," *Journal of the History of Biology* 14, no. 2 (Fall 1981): 249-75; Holt, "Haeckel's Monistic Religion," 267 and Kelly, *The Descent of Darwin*, 27-28.

150. Kelly, *The Descent of Darwin*, 27.

151. Holt, "Haeckel's Monistic Religion," 266.

152. Ruth Anne Gienapp, "The Monism of Ernst Haeckel" (Ph.D. Diss. Cornell University, 1968), 198.

153. On the materialist/idealist binary, see Allen, *Life Science*, xx.

154. Kandinsky, "On the Question of Form," *The Blaue Reiter Almanach* (Munich 1912), in: Kenneth Lindsay and Peter Vergo, eds., *Kandinsky: Complete Writings on Art* (New York: Da Capo Press, 1994), 250. On Kandinsky and Monism, see Chapter Three.
155. Handy, "Ernst Heinrich Haeckel," 401.
156. Haeckel, *Die Welträtsel* (Leipzig: Alfred Kröner Verlag, 1899). Simplified *Taschenausgabe*, 1908.
157. Holt discerns four stages in the development of Haeckel's thinking ("Haeckel's Monistic Religion," 267-8), while Kelly sees one course of change, from materialism and mechanism towards vitalism and even religiosity. (*The Descent of Darwin*, 25.) Note, however, that in Kelly's opinion, despite this evolution, "the public Haeckel is most accurately represented when his work is considered ... as a single unified system." (p. 25)
158. Holt, "Ernst Haeckel's Monistic Religion," 277. Also: Handy, "Ernst Heinrich Haeckel," 401.
159. Paul Weindling, "Ernst Haeckel, Darwinismus and the secularization of nature," in James R. Moore, ed., *History, Humanity and Evolution. Essays for John C. Greene* (Cambridge: Cambridge University Press, 1989), 311.
160. Holt, "Ernst Haeckel's Monistic Religion," 277. On the founding of the Monist League, see John T. Blackmore, *Ernst Mach. His Work, Life and Influence* (Berkeley: University of California Press, 1972), 192-4. On the Monistenbund as an organization of the "Gebildeten-" or "Kultur-Reformbewegung" see Krabbe, *Gesellschaftsveränderung durch Lebensreform*, 131. On a central *topos* of the *Reformbewegung* as a holistic, anti-dualistic/Monistic conception of humanity's "unity with nature," see pp. 167, 171-2
161. On Francé: Wolschke-Bulmahn, *Auf der Suche nach Arkadien*, 84. Bölsche, like Francé, was a popular and radically biocentric writer on natural questions, a convinced Haeckelian, and a member of the *Monistenbund*. Together Francé and Bölsche produced the "Kosmos" series of popular scientific publications which enjoyed enormous success in early twentieth century germanophone Europe. Bölsche's greatest success was his *Liebesleben in der Natur* of 1898-1902 (*Love-Life in Nature. The Story of the Evolution of Love*. Translated by Cyril Brown. New York: Albert & Charles Boni, 1926). Because of Bölsche's enormous influence and output (his books had sold 1.5 million copies by 1914), further study is called for concerning his effect on the biocentric discourse as artists participated in it. See, e.g., my speculations on Klee and Bölsche in Chapter Three. On Bölsche see Kelly, *The Descent of Darwin*, Chapter 3:

"Erotic Monism: The Climax of Popular Darwinism," and Fritz Bolle, "Wilhelm Bölsche: Der Mensch und das Werk," Preface to Bölsche, *Das Liebes-leben in der Natur* (Hannover: Fackel-träger-Verlag, 1955). For a bibliography of his writings see: Bölsche, *Die naturwissenschaftlichen Grundlagen der Poesie*. Johannes J. Braakenburg, ed., (Tübingen: Max Niemeyer and DTV, 1976).

162. Holt, "A Note on Wilhelm Ostwald's Energism," *Isis* 61, no. 208 (Fall 1970): 388.

163. While Holt uses the term "Energism," Milic Capek employs "Energeticism" in his article "Wilhelm Ostwald" in Paul Edwards, ed., *The Encyclopedia of Philosophy* (New York: MacMillan, 1967).

164. *Ibid.*, 5.

165. Holt, "A Note on Wilhelm Ostwald's Energism": 386.

166. On this see Friedrich Niewöhner, "Zum Begriff 'Monismus' bei Haeckel und Ostwald," *Archiv für Begriffsgeschichte* 24, no. 1 (1980): 125; and Weindling, "Ernst Haeckel and Darwinismus," 324.

167. On Ostwald and Ernst Mach, see also Mazumdar, *Species and Specificity*, 69.

168. *Ibid.*, 169-70.

169. Blackmore, *Ernst Mach*, 192-4.

170. Capek, "Wilhelm Ostwald," 6. On the polemic against Vitalismus by the Monists (Driesch was seen and identified himself as a Vitalist), see "Gegen den Vitalismus," *Der Monismus* (1907): 299-300. See Von Uexküll, *Bausteine zu einer biologischen Weltanschauung*, 123, 130ff.

171. See Von Uexküll, *Bausteine zu einer biologischen Weltanschauung*, 36.

172. The term "Energeticist Monism" is cited by Capek in "Wilhelm Ostwald," 5.

173. Fellmann, *Lebensphilosophie*, 27-8.

174. Bramwell, for example, equates Vitalism and *Lebensphilosophie*, in *Ecology in the 20th Century*, 177.

175. Ernő Kállai, "Ideen- und Organisationsentwurf zu einer Internationalen Ausstellung moderner Kunst im Leipziger Museum mit dem Namen 'Kunst und Wirklichkeit,' Eventuell mit dem

Untertitel *Das neue Weltbild der Kunst.*" (typescript in the Archives of the Art Historical Research Group of the Hungarian Academy of Sciences, Budapest, MDK-C-I-11/573 1-13). With reference to Edgar Dacqué, *Urwelt, Sage und Menschheit. Eine naturhistorisch-metaphysische Studie* (1924) Sixth edition (Munich and Berlin: R. Oldenbourg, 1931), 56. The otherwise largely unmarked copy of this edition in the Staatsbibliothek in Berlin has an "x" marked exactly where Kállai's quotation begins. One would wish to speculate that Kállai (living in Berlin at the time) used this copy.

176. Peter A. Angeles, *The Harper Collins Dictionary of Philosophy* Second edition. (New York: Harper Collins, 1992), 216.

177. *Ibid.*, 127.

178. See, e.g., D. C. Phillips, "Organicism in the Late Nineteenth and Early Twentieth Centuries," *Journal of the History of Ideas* 31, no. 3 (July-September 1970): 424-7.

179. Weindling, "Ernst Haeckel, Darwinismus and the secularization of nature," 315.

180. Handy, "Ernst Heinrich Haeckel," 400. See Kelly, *The Descent of Darwin*, 24-25, for an account of the origin of Haeckel's Monism in Darwinism. As we shall see in Chapter Four, this idea, adopted by Francé, became important for Lazar El Lissitzky's biocentric brand of International Constructivism.

181. Bramwell, *Ecology in the 20th Century*, 47 and Bowler, *The Non-Darwinian Revolution*, 84. The American scientist Alpheus Packard coined "Neo-Lamarckian" in 1885. See Bowler, *The Eclipse of Darwinism*, 55, 60. For an acknowledgment of this embedded in an attack on Haeckel as a "fanatischen Materialisten und Mechanisten," see Wagner, *Geschichte des Lamarckismus*, 135.

182. Kelly, *The Descent of Darwin*. On this phenomenon, see also Timothy Lenoir, *The Strategy of Life. Teleology and Mechanics in Nineteenth Century German Biology* (Dordrecht: D. Reidel, 1982); Emanuel Rádl, *The History of Biological Theories (1905-09)* (London: Oxford University Press, 1930), 271ff and Arthur Koestler, *The Case of the Midwife Toad* (New York: Vintage, 1971).

183. Wagner, *Geshichte des Lamarckismus*, VII.

184. Von Uexküll, *Bausteine zu einer biologischen Weltanschauung*, 2.

185. On Huxley's term: Bowler, *The Eclipse of Darwinism*, 5. Peter Bowler has described the Neo-Lamarckian movement within the popularization of Darwinism in "Lamarckism," Chapter 4 of *The Eclipse of Darwinism*. See also Robert Proctor, *Racial Hygiene: Medicine under the Nazis* (Cambridge, Mass.: Harvard University Press, 1988), 31. For a contemporary view, see the Francé-enthusiast Adolf Wagner's *Geschichte des Lamarckismus*.

186. Bowler, *Eclipse of Darwinism*, 55-8.

187. On Psychobiology as a "movement," see endnote 75.

The close relation of Neo-Vitalism and Neo-Lamarckism is the case even if as Bowler writes, "Driesch, the most prominent vitalist of his day, was only a lukewarm advocate of Lamarckism." On the complex relationship between Neo-Lamarckism and Vitalism, see Bowler, *The Eclipse of Darwinism*, 80. On Bergson as Lamarckian, see Harrington, *Reenchanted Science*, 90-1. On Francé, as Neo-Lamarckian, see Francé, *Zoësis*, 19 and *Harmonie in der Natur*, 46 as well as Wagner, *Geschichte des Lamarckismus*. On Neo-Lamarckism as a Neo-Vitalist (as opposed to old Vitalist) position, see Wagner, 14-19.

188. Wagner, *Geschichte des Lamarckismus*, IV-V.

189. Francé would have known of Ostwald's *Naturphilosophie*, volume 1 of *Bücher der Naturwissenschaft* (Leipzig, 1900). In English: *Nature Philosophy*. Translated by T. Seltzer. (New York: Holt, 1919).

190. Francé-Harrar, *Mein fin de siècle*, 45-6.

191. Brigitte Nagel writes: "[Dacqué,] der Vervasser von naturphilosophischen Schriften sah sich als Erneuerer der romantischen Naturphilosophie." Nagel, *Die Weltelehre: Ihre Geschichte und ihre Rolle im "Dritten Reich"* (Stuttgart: Verlag für Geschichte der Naturwissenschaften und der Technik, 1991), 55. On Dacqué as a neo-Nature Philosopher, see also Sawicki, *Lebensanschauungen moderner Denker* Volume 2, 309-13.

192. Dacqué, "Der Mensch als Urform," *Die Kreatur* 3 (1929-30): 231-2.

193. Christian Herrmann, "Wissenschaft," *Sozialistische Monatshefte* 69 no. 7 (July 1929): 637. Or as Sawicki puts it: "Dacqués kühne Behauptungen . . . finden gewiss in den Tatsachen keine hinlängliche Begründung. Bedeutsam aber ist die Wiedereinführung metaphysischer Gedanken in die Naturphilosophie und die Deutung der Natur aus Ideen des Geistes." Sawicki, *Lebensanschauungen moderner Denker*, vol. II, 313. For Dacqué's exposition of this position, see his *Leben als Symbol: Metaphysik einer Entwicklungslehre* (Munich/ Berlin: R. Oldenbourg, 1925), and *Natur und Seele: Eine Beitrag zur*

magischen Weltlehre (Munich/Berlin: R. Oldenbourg, 1926).

194. For a critical view of Dacqué's theories as pseudo-scientific, indeed "pre-fascist," see Ernst Bloch, "Loch Ness, die Seeschlange und Dacqués Urwelt-Sage" (1934) in Bloch, *Literarische Aufsätze*, 470-75. Thanks to Hilmar Frank for this reference and for an introduction to Dacqué. Also, c.f. Dacqué with Bowler's chapter in *The Eclipse of Darwinism*, on "Orthogenesis and Palaeontology," 160ff. On Dacqué and Kállai, see above and Chapter Five. On Kandinsky and Mies, see below. Häring refers to Dacqué in "Probleme der Stadtbildung" (1934) and "Über das Geheimnis der Gestalt" (1954) in Jürgen Joedicke, ed., *Hugo Häring: Schriften, Entwürfe, Bauten* (Stuttgart: Karl Krämer, 1965), 39; 81. Carl Georg Heise refers to Dacqué's *Das Leben als Symbol* in his introduction to Albert Renger-Patzsch, *Die Welt ist schön* (Munich: Kurt Wolff, 1928), 13.

While Immanuel Velikovsky (who lived in interwar Germany, Switzerland and Austria) seems to be indebted to Dacqué, he does not refer to him in *Worlds in Collision* (New York: Delta, 1950).

195. Bowler, *The Eclipse of Darwinism*, 105.

196. Garland E. Allen, Introduction, *Life Science in The Twentieth Century* (New York: John Wiley & Sons, 1975), xix.

197. On the reticence of Holists and Organicists to acknowledge their Neo-Lamarckian ideas, and of Smuts' "explicit use of Lamarckism in [his] attack on mechanistic biology," see Bowler, *The Eclipse of Darwinism*, 105.

198. See, e.g., Robert Augros and George Stanciu, *The New Biology: Discovering the Wisdom in Nature* (Boston: The New Science Library, 1987). On the revival of Neo-Lamarckian ideas currently underway, see also Bowler, *The Non-Darwinian Revolution*, 201. See: Michael Kröger, "'...gleichsam biologische Urzeichen...'" Die Erfindung biomorpher Natur in Malerei und Fotografie der dreissiger Jahre." *Kritische Berichte* 18, no. 4 (April 1990): 84, note 8.

199. On the neo-pantheistic background of *Lebensphilosophie*, see Bollnow, *Die Lebensphilosophie*, 101-12 and Gudrun Kühne-Bertram, *Aus dem Leben -- zum Leben: Entstehung, Wesen und Bedeutung populärer Lebensphilosophien in der Geistesgeschichte des 19. Jahrhunderts* (Frankfurt/Main: Peter Lang, 1987), 86-9. On the animism which underlies Driesch's Neo-Vitalism, see Freyhofer, *The Vitalism of Hans Driesch*.

200. John Parascondala, "Organismic and Holistic Concepts in the Thought of L. J. Henderson," *Journal of the History of Biology* 4, no. 1 (Spring 1971): 64. See also the single list of books on "organismic, holistic views in twentieth-century

science and philosophy" in note 4 on page 64.

201. See Haraway's "Conclusion" for a summary of her arguments in *Crystals, Fabrics and Fields*, 188-206. It should be noted that Haraway does not feel fully successful in having demonstrated such a paradigm shift. Haraway, *Crystals, Fabrics, and Fields*, 195-206. C.f. Dacqué's framing of his own work as representing a "neue Axiom" in *Urwelt, Sage und Menschheit*, 13.

202. *Ibid.*, 38-9.

203. See Harrington, *Reenchanted Science*, 89.

204. *Ibid.*, xvii.

205. *Ibid.*

206. Haraway, *Crystals, Fabrics, and Fields*, 22-3; Harrington, *Reenchanted Science*, 46-54.

207. Jack Burnham, *Beyond Modern Sculpture. The Effects of Science and Technology on the Sculpture of this Century* (New York: George Braziller, 1968), 76.

208. On this friendship and mutual support, see Harrington, *Reenchanted Science*, 48-54. On von Uexküll's son's denial of his father as a "Vitalist" despite his close association with Driesch, and despite his public image as a Vitalist, see 52-3, 228, note 74. On von Uexküll's praise of Driesch's work as being "von grundlegender Bedeutung," see von Uexküll, *Bau- steine zu einer biologischen Weltanschauung*, 36. Harrington feels it possible that von Uexküll's concept of *Umwelt* may have contributed to Heidegger's concept of Being-in-the-World. *Reenchanted Science*, 53-4.

209. Freyhofer, *The Vitalism of Hans Driesch*, 167. On von Uexküll as Vitalist, see also Adolf Behne, "Biologie und Kubismus" *Die Tat* (1916): 699.

210. Haraway, *Crystals, Fabrics and Fields*, 28.

211. *Ibid.*, 6-7. Haraway and Beckner disagree with Frederick Burwick, who sees the organismic paradigm as emerging already in the 18th century, distinct from both mechanism and vitalism. See Burwick's introduction to Burwick, ed., *Approaches to Organic Form: Permutations in Science and Culture*, (Dordrecht: D. Reidel, 1987), ix-x.

212. Morton O. Beckner, "Organismic Biology" in Paul Edwards, ed., *The Encyclopedia of Philosophy* (New York: MacMillan, 1967), 549.

213. Haraway, *Crystals, Fabrics, and Fields*, 32.

214. *Ibid.*, 61.

215. *Ibid.*, 17, 23. On this controversy, see *Ibid.*, 193.

216. Hilde Hein, *On the Nature and Origins of Life* (New York: McGraw-Hill, 1971), 74.

217. Allen, *Life Science in the Twentieth Century*, xxi.

218. Golley, *A History of the Ecosystem Concept in Ecology*, 25-9.

219. Allen, *Life Sciences in the Twentieth Century*, xxi-xxii.

220. Francé, *Die Welt als Erleben*, 24.

221. Note that Francé referred mainly to a *Biozentrische Erkenntnistheorie* or Biocentric epistemology as the basis for what he referred to as *Objektive Philosophie*. See, e.g., *Zoësis*, 10, *Die Welt als Erleben*, 11 and esp. 14. Note however, that he stated that he might as well have termed his *Objektive Philosophie* as *Biozentrische Philosophie*. Francé, *Die Welt als Erleben*, 17. He also referred to it simply as *Biozentrik*. See, e.g., *Bios*, vol. 1, 31.

222. Another way to conceptualize this phenomenon is to think in terms of Wittgenstein's "open set" theory.

223. Steiner, an admirer of Goethe, Darwin and Haeckel, one-time director of the Nietzsche-Archiv in Weimar, would be a study in himself in this connection. On Steiner and ecologism, see Bramwell, *Ecology in the Twentieth Century*, Chapter Ten. On Steiner, Helena Blavatsky and Haeckel, see Gordon, *Expressionism: Art and Idea*, 22.

Sherrye Baker Cohn has convincingly demonstrated the ways in which occult Theosophical ideas combined with Nature Romanticism and both physical and biological scientific ideas to result in Arthur Dove's biomorphic Modernist art. As she writes in the Abstract of her dissertation, "Contradictory as they may appear, science and occultism formed the matrix of his mature art by suggesting ways to visualize nature's hidden energies." Cohn, "The Dialectical Vision of Arthur Dove: The Impact of Science and Occultism on his Modern American Art" (Ph.D. diss., Washington University, 1982, Abstract).

On Taut, see, for example, Iain Boyd Whyte, *Bruno Taut and the Architecture of Activism* (Cambridge: Cambridge University Press, 1979). On Kandinsky in this connection, see Chapter Three. Thanks to Serena Keshavjee for discussing Maeterlinck with me and to Gerta Moray for discussing Carr with me in this context.

It is interesting to note that both Francé and Driesch were interested at various times in the scientific research of occult phenomena. For a photograph by mediumistic photographer Schrenk-Nötzing, see Francé, *Das Buch des Lebens*, 473-4. C.f. Driesch's membership in the Society of Psychical Research in London after 1913 (he was president in 1926-27). Hans Driesch, *Lebenserinnerungen, : Aufzeichnungen eines Forschers und Denken in entscheidender Zeit* (Basle: Ernst Reinhardt, 1951), 214-20.

For a response to the criticism that the Neo-Lamarckist or "psychobiological" movement has mystical elements, see Wagner, *Geschichte des Lamarckismus*, IV-V.

224. It is interesting to note, however, that Mies and Arp had Roman Catholic connections: Mies was born a Roman Catholic and later became an adherent of the Catholic philosophers Romano Guardini and Henri Bergson; Arp was born a Protestant but converted to Catholicism after the death of Sophie Tauer-
Arp, probably under the influence of his second wife, the religious Catholic Margarete Hagenbach. The information on Arp is courtesy of Gabriële Mahn of the Fondation Arp, Clamart, France. On Mies and Catholic philosophy, see Chapter Four, endnote 132. (Bergson, born a Jew, and never baptised, nevertheless became a Roman Catholic in his thinking by the 1930s.) All this reminds one of Kállai's statement that "Es ist kein Zufall, dass katholische Kulturkreise lebhaftes Interesse für die Bioromantik zeigen." In: "Bioromantik," *Forum* (1932): 272. Why this would be the case, requires further study.

225. See Ernst Hoferichter, "Ein Erforscher und Kunder des Lebens," in Herbert Hönel, ed., *Ludwig Klages. Erforscher und Kunder des Lebens. Festschrift zum 75. Geburtstage des Philosophen am 10 Dez. 1947* (Linz: Ost Verlag für Belletristik und Wissenschaft, 1947), 17 and Konrad Eugster, "Anthropozentrisches und nichtanthropozentrisches Weltbild: Versuche zu Begründungen," *Hestia* (1990-91): 56-74.

226. Alfred North Whitehead, *Modes of Thought* (1938) (New York: The Free Press, 1968), 112.

227. Bramwell, *Ecology in the 20th Century*, 39.

228. Bramwell, *Ecology in the 20th Century*, 56 and Harrington, *Reenchanted Science*, 34-48.

229. William Little, et al., *Shorter Oxford English Dictionary* Third edition (1933) (Oxford: Clarendon Press, 1959), 180. James L. Foy, Introduction to Hans Prinzhorn, *Artistry of the Mentally Ill* [1922] (Berlin: Springer-Verlag, 1972), X. Wolfgang Geinitz writes that after his first visit to Klages late in 1920, Prinzhorn "wurde in der Folge ein fanatischer und kompromissloser Verfechter der Klagesischen biozentrischen Lebenslehre." "Hans Prinzhorn. Das unstete Leben eines ewig

Suchenden," *Hestia* (1986-87): 48.

230. See Chapter Three of Taylor, *Respect for Nature*, "The Biocentric Outlook on Nature."

231. Taylor, *Respect for Nature*, 115.

232. Ibid., 160 and Chapter Three, "The Biocentric Outlook on Life." See also Susan J. Armstrong and Richard G. Botzler, eds., *Environmental Ethics. Divergence and Convergence* (New York: McGraw-Hill, 1993), 354. The editors of this anthology seem to prefer the use of the term "ecocentrism" in this regard, but also note the employment of "deep ecology" and "holism" as synonyms. (pp. 369, 405) For an example of the equivalence of the terms "ecocentrism," "biocentrism," and "deep ecology," see also Ferry, *The New Ecological Order*, xxiv.

233. Kant and Arthur Lovejoy (and perhaps a couple of others) are the only authors cited whose books appeared before the 1960s, indeed the vast majority are citations of books published after 1975. Besides Arne Naess (who is Norwegian) and Georg Henrick von Wright not a single "Germanic" author is cited, not even Konrad Lorenz or the authors of the Green Movement. C.f. also Murray Bookchin's declaration of his 1964 text "Ecology and Revolutionary Thought" as the "manifesto of the ecological movement," as if Klages had never read his "Mensch und Erde" publicly in 1913. This is especially poignant given that Bookchin was among the first to write on environmental issues after the war, as his essay of 1949 indicates. (See Heider, *Anarchism*, 68; 58-9.) On the ahistoricism of the ecological movement, see Ulrich Linse, *Ökopax und Anarchie. Eine Geschichte der ökologischen Bewegungen in Deutschland* (Munich: DTV, 1986), 7.

234. David Oates, *Earth Rising: Ecological Belief in an Age of Science* (Corvallis, Oregon: Oregon State University Press, 1989), 64, 163, 194. Note that Arne Naess, the inventor of the term "deep ecology" was born in Norway in 1912, and may form a bridge from Germanic biocentrism to the contemporary North American ecological movement. See Taylor, *Respect for Nature*, 411. The nobel-prize-winning Norwegian novelist Knut Hamsun -- very popular among biocentrically-minded European readers in the late teens and twenties -- was a *völkisch* biocentric, and he collaborated with the Nazis during the German occupation of Norway. For the view that "some of Deep Ecology's roots lie in Nazism," see Luc Ferry, *The New Ecological Order*, 90. No doubt much of this silence is due to the fact that references to this fascist pre-history of environmentalism tend to wish to discredit environmentalist causes. But by not addressing, as Thomas Kluge points out in his *Gesellschaft, Natur, Technik*, the unresolved theoretical and political issues and contradic-

tions of Spenglerian and other pre-war, proto-Fascist and Fascist environmentalisms, the post-war environmental movement will continue to face accusations of a repressed or "secret" continuity with Fascist ecocentrism.

235. Adolf Hitler, *Mein Kampf* (1924). Ralph Manheim, trans. (Boston: Houghton Mifflin, 1971), 284-5.

236. Harrington, *Reenchanted Science*, xxii.

237. Unless otherwise indicated, biographical information is from Francé's autobiography, *Der Weg zu mir*.

238. In Hungarian he was known by the Hungarian version of these names, "Rezső." See "Francé Rezső," *A craspedomonadinák szervezete* (Budapest: Királyi Magyar Természettudományi Társulat, 1897).

239. Francé, *Der Weg zu mir*, 11-23.

240. Francé retained strong feelings for Hungary throughout his life. Thus, he arranged for the publication of some of his books in Hungarian, and he was a life-long reader of the journal of the Hungarian Academy of Sciences. (Francé, *Der Weg zu mir*, 73) He expresses his affection for Budapest (which he refers to as his *Heimat*) and for Hungary in his autobiography, *Der Weg zu mir*, in his discussion of his decision to leave for Germany, which he explains as a desire to return to his ethnic roots. (pp. 162-3). After the outbreak of war caught him and his wife in Dubrovnik, however, he fled to Hungary rather than to his parents' native Bohemia (then under German occupation), to his native Austria, or to his adopted Germany.

241. Francé, *Der Weg zu mir*, 228-31.

242. Ernő Kállai, "Asszimiláció vagy disszimiláció" [Assimilation or dissimilation] *Korunk Szava* [Voice of our age] (1 February 1938). Reprinted in: Ernő Kállai, *Művészet veszélyes csillagzat alatt. Válogatott cikkek, tanulmányok* [Art under dangerous constellations. Selected articles, studies] Éva Forgács, ed., (Budapest: Corvina, 1981), 265-70.

243. Examples often cited in this connection are the "Austrian" Adolf Hitler and the Transylvanian-Armenian Ferenc Szálasi, head of the Hungarian Fascist "Arrow Cross."

244. Kállai, even though he was more of an assimilated "Hungarian" than Francé, would probably have stayed in Germany had the Nazis not come to power, and assimilated fully to Germany. As it happened, they did, and he returned to Budapest in 1935. On Kállai, see Chapter Five.

245. Raoul Francé, *München: Die Lebensgesetze einer Stadt* (Munich: Bruckmann, 1920).

246. On Francé's politics see Adolf Wagner, ed., *Der Begründer der Lebenslehre: Raoul H. Francé. Eine Festschrift zu seinem 50. Geburtstag*, special issue of *Die Fahne*, 6, no. 3 (Stuttgart: Walter Seifert, May 1924). On his socialism: Fischer, *Raoul H. Francé. Das Buch eines Lebens*, 189. On Förster-Nietzsche, see Tenschert, Intro. *Entdeckung der Heimat*, 18. On Förster-Nietzsche in Weimar and on Francé meeting Spengler in 1923 in Weimar, see Francé-Harrar, *Mein fin de siècle*, 184-97. Francé-Harrar refers to Förster-Nietzsche -- not without a critical note -- as "die Repräsentantin der Familie [Nietzsche], des bürgerlichen und dogmatischen Rechts, die ihn [Nietzsche] so lange überlebt hat." (p. 187) For Lienhard's neo-Conservative views pertaining to Francé, see *Francé. Eine Festschrift*, 15-16. For a neo-Conservative but specifically anti-Nazi appreciation of Francé emphasizing his mixed heritage, see Wilhelm Schwaner, "Raoul H. Francé und die deutsche Heimat," 29-31.

247. Hausmann, "Intellektualismus, Gesellschaft und Gemeinschaft." Francé, *Die Kultur von Morgen*, esp. Chapters 22, 23.

248. Francé, *Die Kultur von Morgen*, 153-4.

249. The biographies and *Festschrift* published on the occasion of his fiftieth birthday in 1924 mark the high-water point of Francé's fame. As I shall argue in Chapter Four, 1923 to 1925 were also the years of the "biocentric Constructivist discourse" inspired by Francé's writings. Francé produced the bulk of his *Grundlagen einer objektiven Philosophie* during this period. See Francé, *Bios*, vol. 1, "Vorwort." For his only -- rather ambivalent -- comment on the Bauhaus, see *Plasmantik*, 9. I discuss this in Chapter Three. On his viewing of the Bauhaus-Ausstellung of 1923 and his meeting with Walter Gropius -- a decidedly un-neoconservative thing to have done within the highly-dichotomized Weimar context of the time, see Francé-Harrar, *Mein fin de siècle*, 204. Francé-Harrar, a former art critic, was not impressed by the art on show at the Bauhaus-ausstellung, though she enjoyed Tristan Tzara's performance during the Dada-Constructivist Congress in Weimar in late September of 1922. (p. 204)

250. Roth cites 1923 as the year of their move to Salzburg, and 1931 as the year of their move to Dubrovnik, in "The Foundation of Bionics," 238. The years 1924 and 1926 are also cited in the literature as the dates of their move to Salzburg.

251. Additional biographical information is from Tenschert, introduction to Francé, *Die Entdeckung der Heimat* (1982).

252. Kelly, *The Descent of Darwin*, 5.

253. See Christian Bromig's critique of Michael Kröger in Bromig, "Biomorphismus oder Anthropozentrismus? Einige kritische Anmerkungen zu Michael Kröger's Aufsatz 'Die Erfindung biomorpher Natur in Malerei und Fotografie der dreissiger Jahre'," *Kritische Berichte* 19, no. 2 (1991): 92.

254. On Driesch and Nazism, see Harrington, *Reenchanted Science*, and Freyhofer, *The Vitalism of Hans Driesch*, 133-4, 157-64. On von Uexküll's early "hopes" in the [Nazi] "Bewegung," the Nazis' attempts to recruit him, and his opposition to Nazism after it assumed power, see Gudrun von Uexküll, *Jakob von Uexküll: Seine Welt und seine Umwelt* (Hamburg: Christian Wegner, 1964), 164-76. According to Schmidt, it was in the second, 1933 edition of von Uexküll's book *Staatsbiologie* that von Uexküll expressed some optimism concerning the emergent Nazi state. Schmidt, "Die Umweltlehre Jakob von Uexkülls," 13-14. See Von Uexküll, *Staatsbiologie. Anatomie-Physiologie-Pathologie des Staates*. Second revised edition. (Hamburg 1933). According to Gudrun, his widow, the Baron's opposition to Nazism was based on their policy of firing and persecuting Jews. For his view that his late friend Houston Stewart Chamberlain would not have approved of the use which the Nazis put his racial theories to, see Jakob's letter to Chamberlain's widow Eva Wagner Chamberlain -- Hitler's friend -- reprinted in full by Gudrun on pages 171-3. Eventually von Uexküll was retired from his Institute for Environmental Studies in Hamburg, and he moved to Capri for health reasons, where he died in 1944. See also Jutta Schmidt, "Die Umweltlehre Jakob von Uexkülls in ihrer Bedeutung für die Entwicklung der vergleichenden Verhaltensforschung" (Ph.D. diss., Phillips-Universität Marburg/Lahn, 1980), 13-14. Spengler's rejection of Nazism is well-known. See, e.g., Anton Kaes, Martin Jay and Edward Dimendberg, eds., *The Weimar Republic Sourcebook* (Berkeley: University of California Press, 1994), 760. While they refused to join the National Socialists, it should be pointed out that they failed to actively resist Nazism. While Prinzhorn did not join the Party, he was closely associated with it from 1930 to his suicide in 1933. See Geinitz, "Hans Prinzhorn," 60-1 and Sander L. Gilman, "Madness and Representation: Hans Prinzhorn's Study of Madness and Art in its Historical Context," in Stephen Prokopoff, *The Prinzhorn Collection: Selected Work from the Prinzhorn Collection of the Art of the Mentally Ill* (Champaign, Ill.: Krannert Art Museum, 1984). On Francé, see below. For French Parallels, see Jack J. Spector's "Surrealism Redefined" (a review of Hal Foster's *Compulsive Beauty*, in the *Art Journal*, Fall 1994: 110), in which he points out Georges Bataille's and even André Breton's flirtation with the French Fascist journal *Contre-Attaque* in 1934-35. While Breton rejected such an association, Bataille -- even if briefly -- engaged in it.

255. Kelly, *The Descent of Darwin*, 101.

256. On this question, see Harrington, *Reenchanted Science*, xxi.

257. The breakdown of the Left-Right structure of ideological categorization is reflected in Andrew Hewitt's statement: "Fascism eludes classification. It disorients political analysis in the confusion of left and right, refuses to point the way forward by conflating progress and reaction. Fascism is and was a scandal, both historically and theoretically." *Fascist Modernism. Aesthetics, Politics and the Avant-Garde* (Stanford, CA: Stanford University Press, 1993), 68.

258. Otto-Ernst Schüddekopf, *Linke Leute von Rechts. Die national-revolutionären Minderheiten und der Kommunismus in der Weimarer Republik*. Stuttgart, 1968, referred to by Gert Mattenklott, "Sinnlich -- Übersinnlich: Verklärungen des Vitalen in der ersten Jahrhunderthälfte," in: *Élan Vital oder das Auge des Eros. Kandinsky, Klee, Arp, Miró, Calder*, exh. cat. (Munich: Haus der Kunst, 1994), 17.

259. For approaches to this Left-Right problem, see also the acknowledgement that the biocentric tradition affected both the Left and the Right by Helmut Günther, "Geschichtlicher Abriss der deutschen Rhythmusbewegung," in: Eva Bannmüller and Peter Röthig, eds., *Grundlagen und Perspektiven ästhetischer und rhythmischer Bewegungserziehung* (Stuttgart: Ernst Klett, 1990), 35.

260. Mattenklott, "Sinnlich -- Übersinnlich," 16.

261. Bramwell, Pois and Ferry have begun to point out the commonalities between Nazi nature ideology and that of the environmental movement. This continues to be controversial. According to Bramwell, Walther Darré and Rudolf Hess were among the most prominent in this category, but according to Pois, so were Ernst Kriek, Heinrich Himmler, and Hitler himself. Bramwell, *Ecology in the 20th Century*, 197. Pois, *National Socialism and the Religion of Nature*.

262. On the problematic nature of concepts such as "progressive" or "advanced" and "regressive," see Mark C. Taylor, *Disfiguring: Art, Architecture, Religion* (Chicago: University of Chicago Press, 1992), 14.

See, Bloch's description of Klages as a "weekend philosopher" or as a "kompletten Tarzan-Philosophen..." Quoted in Roland Müller, *Das verzwestete Ich -- Ludwig Klages und sein philosophisches Hauptwerk 'Der Geist als Widersacher der Seele'* (Bern and Frankfurt/Main: Herbert Lang, 1971), 21.

Georg Lukács, *Die Zerstörung der Vernunft* (Berlin: H. Luchterhand, 1962), 202-5. Lukács categorizes Klages as one of

the "Präfaschistisches und faschistische Lebensphilosophen" along with Alfred Rosenberg. This is especially astonishing given Klages' opposition to Nietzsche's idea of the "Will to Power," indeed to all forms of power, his lifelong Pacifism (which Lukács was aware of -- see p. 206), his related residency in Switzerland from 1915 until his death in 1956, his refusal to join the Nazis, and Alfred Rosenberg's and other Nazis attack on him in the late 30s. For a critique of Lukács's slandering of Klages, see Richard Hinton Thomas, "Nietzsche in Weimar Germany -- and the case of Ludwig Klages," in Anthony Phelan, ed., *The Weimar Dilemma: Intellectuals in the Weimar Republik* (Manchester: Manchester University Press, 1985), 86-7. On Lukács's own heavy use of Vitalist terminology (not surprising given his intellectual history, particularly his early devotion to Nietzsche, Dilthey and Simmel), see Rodney Livingstone's "Notes to the English Edition" of Lukács, *History and Class Consciousness*, 344. On this question see also Jain, *Das Prinzip Leben*, 76-8.

In volume 4 of *The Social History of Art*, Hauser -- in a more nuanced fashion than Lukács, groups figures such as Bergson, Ortega y Gasset, Spengler, Hermann Graf Keyserling, Klages "and the rest" together as those thinkers who are "consciously or unconsciously reactionary and prepare the way for fascism." (Stanley Godman, trans., New York: Vintage Books, 1958), 228.

263. Freyhofer, *The Vitalism of Hans Driesch*, 168-9. It seems, after World War Two, as if Positivism/Materialism was the position triumphant in the dominant scientific establishment, but the various forms of Vitalism never died out completely. In 1972 Hilde Hein reported on the status of the Mechanist/Vitalist controversy. She wrote that despite the fact the "[c]ontemporary scientists and historians of science have declared the mechanism-vitalism debate a dead issue ... the controversy persists and that while modifications of positions have followed the evolution of scientific concepts, the basic metatheoretical commitments remain as essentially unchanged and unexamined foundations of contemporary differences within the field of biology." Hilde Hein, "The Endurance of the Mechanism-Vitalism Controversy," *Journal of the History of Biology*, 5, no. 1 (Spring 1972): 159-61. Since 1972, at the height the hegemony of Positivist science, the debate has intensified with the rise of various "New Age" sciences such as that described in Augros and Stanciu, *The New Biology*.

264. Quoted by Burnham, in *Beyond Modern Sculpture*, 56.

265. On Darré and the "Green Nazis," see Bramwell, *Blood and Soil*, especially chapter eight. See also Ferry, *The New Ecological Order*, Chapter Five, "Nazi Ecology." This is not to deny the strong Neo-Vitalist element in popular Nazi thinking. But such an element was equally strong among non-Nazis in the

early 20th century, indeed among everyone affected by Nietzsche's writings, and can therefore not be seen to be an exclusive characteristic of Nazism.

266. See Harrington, *Reenchanted Science*, Chapter 6 and Proctor, *Racial Hygiene*, Chapter 8, "The 'Organic Vision' of Nazi Racial Science."

267. Paul Brohmer, "The New Biology: Training in Racial Citizenship" (1933) in George L. Mosse, ed., *Nazi Culture: Intellectual, Cultural and Social Life in the Third Reich* (New York: Grosset & Dunlap, 1966), 81-90. On the subject of Nazism, the critique of technology, and environmentalism, see also Kluge, *Wissenschaft, Natur, Technik*, Part 2.

268. Quoted in Proctor, *Racial Hygiene*, 223.

269. Pois, *National Socialism and the Religion of Nature*, 10-11, 39. Though Pois is not familiar with the larger *geistesgeschichtlich* context of biocentrism, he does essentially say this: "What Hitler had done was to wed a putatively scientific view of the universe to a form of pantheistic mysticism presumably congruent with adherence to 'natural laws.' In this, he bore a marked resemblance to such Darwinians as Ernst Haeckel who ... informed their scientific endeavors with large doses of romanticism..." (pp. 39-40) Anna Bramwell argues that National Socialism differed from other European Fascisms in that they were not nature-centric. Another nature-centric Fascist movement -- but one which did not achieve political power -- was the one in England, which exercised a strong influence on British Modernists such as Wyndham Lewis, Ezra Pound and even D.H. Lawrence. See Bramwell, *Ecology in the 20th Century*, Chapter Eight.

270. Pois, *National Socialism and the Religion of Nature*, 3. Harrington has identified the rhetoric of Organicism and Holism in Nazi culture in *Reenchanted Science*, chapter 6. Of course, as Bramwell and Pois have pointed out, this is a notion uncomfortable to many: "This being the case, one wonders why so little attention has been paid to the most interesting view that the leading ideologues of Nazi Germany had with regard to humankind's place in the natural world. It is the opinion of this writer that outside of the fact that ... some historians probably do not take this (or ... any) aspects of Nazi ideology very seriously ... in the character and tone of the Nazi approach one can readily apprehend ... elements which demonstrate that, in certain crucial aspects, National Socialism was very much in the mainstream not only of German but of Western philosophical and religious developments. Unconsciously, perhaps, people are a bit uncomfortable with this." (p. 35) On this topic, see also Ferry, *The New Ecological Order*, Chapter 4.

271. On Francé and National Socialism, see below. On Krannhals' organicism and National Socialism, see Juga Krannhals' Foreword to the second edition of Krannhals' *Das organische Weltbild* (Munich: Bruckmann, 1936), unpag.
272. There is an extensive literature on Heidegger's active Nazi involvement in 1933-34, and his subsequent failure to leave the Party until 1945. See, e.g., *Critical Inquiry* (1989). Note that while Prinzhorn was associated with the Nazis in the early 30s, he did not actually join the Party.
273. Jain, *Das Prinzip Leben*, 72.
274. Fellmann, *Lebensphilosophie*, 166. Lessing, a childhood friend of Klages, was a Jewish biocentric Marxist.
275. Bramwell shows that National Socialism was unique among Fascist parties in this respect. She also points out that Hitler, though a vegetarian and an animal rights supporter, was not an environmentalist. See Bramwell, *Ecology in the 20th Century*, 173.
276. Harrington, *Reenchanted Science*, 195ff. Bramwell also writes of this backlash in *Blood and Soil*. The success of this backlash calls into question Hitler's adherence to biocentric ideals. See also Kluge, *Gesellschaft, Natur, Technik*, Part 2.
277. Schnädelbach, *Philosophy in Germany 1831-1933*, 140.
278. Bramwell, *Ecology in the 20th Century*, 177.
279. Fellmann, *Lebensphilosophie*, 31.
280. Hartmut Nowacki, *Zwischen Lebensphilosophie und Stalinismus. Philosophische Ansätze in der Kommunistischen Partei Deutschlands (1918-1933)* (Munich: Profil, 1983). On this issue, see also Jain, *Das Prinzip Leben*, 71-87, and her source, Ottmann, "Anti-Lukács..."
281. Bramwell, *Ecology in the 20th Century*, 51-2.
282. Kelly, *The Descent of Darwin*, 93. Even Daniel Gasman had to deal with the close association between the *Monistenbund* and Social Democracy. See Gasman, *The Scientific Origins of National Socialism*, 113-34.
283. Weindling, "Ernst Haeckel and Darwinismus," 324-5.
284. Harrington, *Reenchanted Science*, 188-93.

285. Günter Hecht, spokesman for the Nazi Party's Department of Race Politics, quoted in Harrington, *Reenchanted Science*, 194. See Dale Riepe's Introduction to de Groot, *Haeckel's Theory of the Unity of Nature*, 10 and Gasman, *The Scientific Origins of National Socialism*. Gasman's anachronistic and ahistorical view of Haeckel is largely reproduced in Hans-Walter Schmuhl, *Rassenhygiene, Nationalsozialismus, Euthanasie* (Göttingen: Vandenhoeck & Ruprecht, 1987). Schmuhl's argument, that Haeckel, who was along with many other prominent intellectuals throughout the Western world (including *inter alia*, Magnus Hirschfeld, Carl and Gerhard Hauptmann, see Schmuhl, 90), a eugenicist, was the forerunner of Nazi euthanasia policies, is contradicted by his own conclusion that "Das Euthanasie programm war kein genuin nationalsozialistisches Phänomen," and that "Die Genesis der 'Euthanasie' war nicht auf einen zentral gesteuerten, planrationalen Entscheidungsprozess zurückzuführen, sondern auf die spontane Improvisation, die sich im Spannungsfeld von Kompetenzkonflikten zwischen konkurrierenden Herrschaftsträgern entwickelten." (pp. 369-70; on this question, see especially Proctor, *Racial Hygiene*. As Proctor notes, "I do not want to leave the impression that 'racial hygiene' [i.e. eugenics] was a movement that wholly endorsed the rise of Nazism. As is true in the case of American eugenics, there were important figures within the German movement who rejected Nordic supremacy, and these people suffered to some extent under the Nazis.... [N]ot paying sufficient attention to the Nordic question [was] ... a common Nazi criticism of the eugenics movement Differences between racist and nonracist versions of racial hygiene continued to appear from time to time in both the medical and popular press, even after the rise of the Nazis." (p. 29) Presumably because of an unspoken defence of his own Marxist position, Schmuhl downplays the very strong relations of the Monistenbund to Social Democracy and the eugenicist component in Social Democracy and Marxism itself, indeed the powerful Soviet eugenics movement, (see Proctor, 58) and tends to see, like Gasman, the Monist movement as exclusively a rightist, proto-Nazi organization -- a position absurd in light of overwhelming evidence. "Die pseudosozialistische Phraseologie in den Schriften führender Rassenhygieniker darf nicht darüber hinwegtäuschen, dass der Sozialdarwinismus der Sozialdemokratie den 'Sozialaristokratismus' entgegengesetzte." (p. 75) The fact is that as part of the biologism of the time, the eugenics movement crossed all political boundaries, just as the push for euthanasia does today. One of Schmuhl's most obvious errors is the assumption which seems to underly his discourse, that all followers of the "bioorganismic" social metaphor were Social Darwinists, a movement which gave impetus to the eugenicist movement. (See, e.g., pp. 29-30. On Haeckel, Monism, eugenics and euthanasia, see pp. 31ff.) Schmuhl exaggerated Haeckel's role in the connection between eugenics and euthanasia, even though it was the Swiss doctor Alfred Ploetz

who first made it, and as Schmuhl himself notes, Haeckel barely addressed the issue: "Die Euthanasieidee stand also im Einklang mit der von Haeckel vertretenen naturalistischen Moralphilosophie. Dass er dennoch darauf verzichtete, die Freigabe 'erbpflegerisch begründeter Kindestötungen' *expressis verbis* zu verlangen, war auf ein spezifisches Desinteresse zurückzuführen, das auf seinem Vertrauen auf die regulativen Mechanismen innerhalb des Evolutionsprozesses beruhte." (p. 33) On this controversy, see also Bowler, *The Non-Darwinian Revolution*, 189.

286. In her dissertation, Gail Perez does not seem to be able to decide whether Lawrence was "progressive" or "fascist" and argues for even his seemingly "progressive" early political stances as being at base "reactionary," while concluding that "he fits into the broader tradition of anti-materialist assaults on bourgeois culture, a tradition that favors vitalism and primitivism." Abstract, "Power and Alterity in D. H. Lawrence's *Thought and Art: 1914-1925*" (Ph.D. diss., Stanford University, 1992). Clearly her dissertation is badly in need of Bramwell's taxonomy. There are more examples like this. A dissertation that does not attempt to force Lawrence into the "progressive or reactionary" straightjacket is Helen Livianos' "Threads of D. H. Lawrence's Philosophy of Vitalism in the Tapestry of *Sons and Lovers*," (M.A. thesis, Florida Atlantic University, 1993).

287. Harrington, *Reenchanted Science*, 177-8, 194.

288. *Ibid.*, xxi.

289. On this see Kelly, *The Descent of Darwin*, 100-01, and Schmuhl, *Rassenhygiene*, 19.

290. Jürgen Sandmann, *Der Bruch mit der humanitären Tradition. Die Biologisierung der Ethik bei Ernst Haeckel und anderen Darwinisten seiner Zeit* (Stuttgart: Gustav Fischer, 1990), esp. 12-14, 186-90.

291. Kelly, *The Descent of Darwin*, 116-7.

292. *Ibid.*, 114.

293. *Ibid.*, 118.

294. *Ibid.*, 119.

295. Schmuhl, *Rassenhygiene*, 362.

296. On the international popularity of eugenics before Nazism, see Bowler, *The Non-Darwinian Revolution*, 168. On the popularity of eugenics early in the century among American

social reformers and progressives, see Donna Jean Haraway, *Primate Vision: Gender, Race and Nature in the World of Modern Science* (New York: Routledge, 1989), 57-8. Since the mid 90s these countries -- such as Canada, Switzerland and Sweden -- have begun to pay for their eugenic policies, which entailed the forced sterilization of thousands of people.

297. Paul Weindling, *Health, race and German politics between national unification and Nazism, 1870-1945* (Cambridge: Cambridge University Press, 1989), 6-7.

298. Schmuhl, *Rassenhygiene*, 370.

299. See Claudia Koonz, "Eugenics, Gender and Ethics in Nazi Germany: The Debates about Involuntary Sterilization," in Thomas Childers and Jane Caplan, *Reevaluating the Third Reich* (New York: Holmes and Meier, 1993), 69, 77. See also the discussion of Harmsen in Chapter Three.

300. Richard Wolin, "Walter Benjamin Today" in Wolin, *Labyrinths: Explorations in the Critical History of Ideas* (Amherst: University of Massachusetts Press, 1995), 63.

301. C.f. David Pepper: "If we are to draw any conclusion from all this it must be that we have shown that ecocentrism is politically most ambiguous and that it has, as O'Riordan pointed out, distinctive and opposite political wings." In: *The Roots of Modern Environmentalism* (London: Croom Helm, 1984) See also T. O'Riordan, "Environmental Ideologies," *Environment and Planning, Series A*, no. 9: 3-14.

302. Bramwell, *Ecology in the 20th Century*, 4.

303. On Eco-Art, see, e.g., Barbara Matilsky, *Fragile Ecologies: Artists' Interpretations and Solutions*, exh. cat. (New York: Rizzoli, 1992); *Art and the Natural Environment, Art and Design Profile no. 36* (1994); and Paul O'Brian, "Art and Ecology: A New Orthodoxy," *Circa 60* (Nov.-Dec. 1991): 18-25. O'Brian is, as far as I know, the first art writer to employ Bramwell's category in his writing.

304. Hepp, *Avantgarde*, 78.

305. Susan Sontag, *Aids and Its Metaphors* (New York: Farrar, Straus and Giroux, 1989), 6.

306. There are major omissions in her book, for example, not a single mention of Francé, one of the best-known environmentalists in interwar Germany. While most point out Bramwell's failings as an historian (see especially Donald Worster, *Isis* 81, no. 4, 1990: 800), some see her as being neutral, ambivalent, even supportive towards the environmental movement

(Ronald C. Tobey, *American Scientist* 78, March-April 1990: 186; Robert L. Burgess in *The Quarterly Review of Biology* 63, June 1990: 243; Rob Waller, *The Ecologist* 19, no. 5, September-October 1989: 201), others as opposing it (Worster in *Isis*; Paolo Palladini, *British Journal for the History of Science* 24, pt. 4, no 83, December 1994: 471-3). Actually, Bramwell states her support of environmentalism, but is ambivalent towards some views expressed by followers of "ecologism." It is interesting to note that the confusion among reviewers with respect to Bramwell's own politics is isomorphic with her subject matter, and I suspect, with her own politics as well. For a curious account of biocentric Nazis such as Darré and Hess, which reads at times almost like an *apologia* or rehabilitation, see her book *Blood and Soil*.

307. Hitler, *Mein Kampf*, 287.

308. Fellmann, *Lebensphilosophie*, 33.

309. Harrington, *Reenchanted Science*, xx.

310. Fellmann, *Lebensphilosophie*, 143.

311. Note that though Harrington sees Driesch as the "father" of German Holism, she sees it principally as an interwar phenomenon. See *Reenchanted Science*, xx.

312. Fritz Neumeyer, *The Artless Word: Mies van der Rohe on the Building Art*, Mark Jarzombek, trans. (Cambridge Mass.: The MIT Press, 1991), 357, 106 respectively. Neumeyer analyses Mies' library in Parts IV and V of his book. Though some items are retained by family members, most of the library is housed in the Special Collections Department of the University of Illinois in Chicago. (Information courtesy of the staff in Special Collections.)

313. Johann W. von Goethe, *Versuch die metamorphose der Pflanzen zu erklären* (Gotha: Carl Wilhelm Ettinger, 1790), *Goethes morphologische Schriften*, Wilhelm Troll, ed. (Jena: Eugen Diederichs, 1926); Carl Gustav Carus, *Psyche* (Jena: Eugen Diederichs, 1926); Friedrich Wilhelm Nietzsche, *Friedrich Nietzsches Briefwechsel mit Erwin Rohde* (Leipzig: Insel-Verlag, 1903), *Gedichte und Sprüche* (Leipzig: A. Kröner, 1919), *Jenseits von Gut und Böse* (Leipzig: C.G. Neumann, 1905); Henri Bergson, *Schöpferische Entwicklung* (Jena: Eugen Diederichs, 1921), Dietrich Heinrich Kerler, *Henri Bergson und das Problem des Verhältnisses zwischen Leib und Seele* (Ulm: Heinrich Kerler, 1917); Hans Driesch, *Philosophie des organischen* (Leipzig: W. Engelmann, 1921), *Driesch, Ordnungslehre* (Jena: Eugen Diederichs, 1923); Simmel, *Fragmente und Aufsätze aus dem Nachlass* (Munich: Drei Masken Verlag, 1923), *Philosophisches Kultur* (Leipzig: W. Klinkhardt, 1911); Wilhelm von

Dilthey, *Briefwechsel zwischen Wilhelm Dilthey und Graf Paul Yorck von Wartenburg, 1877-1897* (Halle: M. Niemeyer, 1923), *Das Erlebnis und die Dichtung: Lessing, Goethe, Novalis, Hölderlin* (Leipzig: B.G. Teubner, 1913); Ludwig Klages, *Persöhnlichkeit* (Potsdam: Müller & Kiepenheuer, 1927); Jakob Johann, Baron von Uexküll, *Theoretische Biologie* (Berlin: Paetel, 1920); *Umwelt und Innenwelt der Tiere* (Berlin: J. Springer, 1921); *Der Unsterbliche Geist in der Natur* (Hamburg: C. Wegner, 1938). Notably absent is Klages' *Der Geist als Widersacher der Seele*.

314. Freihoffer, *The Vitalism of Hans Driesch*, 135.

315. Harrington, *Reenchanted Science*, 48 and Bakhtin in: Burwick and Douglas, eds., *The Crisis in Modernism*, 22.

316. Hans Prinzhorn, *Leib-Seele-Einheit. Ein Kernproblem der neuen Psychologie* (Potsdam: Müller & Kiepenheuer, Zürich: Orell Füssli, 1927). On Prinzhorn becoming a Klages-follower in 1920, see Wolfgang Geinitz, "Hans Prinzhorn," *Hestia* (1986-87): 48 and Hans Kasdorff, "Klages und Prinzhorn," *Hestia* (1986-87): 8-21. Felix Krüger, *Komplexqualitäten* (Munich: Beck, 1926), *Der Struktur-begriff in der Psychologie* (Jena: Gustav Fischer, 1931). Eduard Spranger, *Lebensformen. Geisteswissenschaftliche Psychologie und Ethik der Persönlichkeit* (Halle: Max Niemeyer, 1922). Mies knew Spranger personally. See Neumeyer, *The Artless Word*, 106-7. (On Spranger, see, e.g., Sawicki, *Moderne Denker* Volume 2, 78; Jain, *Das Prinzip Leben*, 98ff and 197-215; and Friedrich Dessauer, *Streit um die Technik* (Frankfurt/Main: Josef Knecht, 1956), 200 ff.) Helmuth Plessner, *Die Einheit der Sinne* (Bonn: F. Cohen, 1923). Rudolf Odebrecht, *Gefühl und Ganzheit* (Berlin: Junker und Dönhaupt, 1929).

317. On Dacqué, see above and also Chapter Five. Kandinsky's library included Dacqué's *Leben als Symbol* (Munich: R. Oldenbourg, 1928) as well as *Urwelt, Sage und Menschheit*. (Kandinsky Library, Centre Georges Pompidou, Fonds Kandinsky) On his library see Chapter Three.

318. Scheerer is discussed by Harrington in *Reenchanted Science*, 61.

319. On this, see Fellmann, *Lebensphilosophie*, 167-8. See Lessing, *Untergang der Erde am Geist*.

320. On Spengler and Lissitzky, see Nisbet, *El Lissitzky*, 29. Hausmann was a biocentric firmly on the Left, however.

321. Jakob von Uexküll, *Staatsbiologie* (Berlin: Gebrüder Pätel, 1920), Oscar Hertwig, *Der Staat als Organismus. Gedanken zur Entwicklung der Menschheit* (Jena: Gustav Fischer,

1922). Discussed in Harrington, *Reenchanted Science*, 61.

322. Oswald Spengler, *Der Untergang des Abendlandes* (1918) (Munich: C. H. Beck, 1920-22). Mies also owned Spengler's *Preussentum und Sozialismus* (Munich: C.H. Beck, 1920). On the importance of Spengler, see Fellmann, *Lebensphilosophie*, 142-54. Krannhals, *Das organische Weltbild*. Harrington does not discuss Krannhals' book in *Reenchanted Science*, but refers to it on p. 23. Chrystostom Panfoeder, *Das Organische* (Mainz: Matthias-Grünewald-Verlag, 1929). Adolf Wagner, *Der organische Staat* (Leipzig: R. Voigtländer, 1926). Wagner edited and introduced Francé's *Festschrift* published for his fiftieth birthday. Rudolf Leinen, *Der Wille zum Ganzen* (Leipzig: F. Meiner, 1922). Petr Alekseevich, kniaz Kropotkin, *Die Eroberung des Brotes* (Berlin: "Der Syndikalist", 1920) and *Landwirtschaft, Industrie und Handwerk* (Berlin: "Der Syndikalist" and Fritz Kater, 1921).

323. Haustein wrote for *Sozialistische Monatshefte* from at least 1925 on. See, e.g., his history of Neo-Vitalism in *Sozialistische Monatshefte* 63, no. 3 (March 1926): 100, and his article on Neo-Darwinism in *Sozialistische Monatshefte* 64, no. 6 (June 1927): 490-1. Haustein discusses Haeckel, Lamarck, evolution, Dacqué, Driesch, von Uexküll, Darwin, genetics, etc. during the mid to late 20s. Kállai also wrote for this journal, and he seems to have garnered much of his knowledge on the biocentric discourse from this column.

324. Neumeyer lists these in *The Artless Word*, 357. On the fashion for plant psychology: Francé, *So musst du Leben!*, 164.

325. Francé, *Die Pflanze als Erfinder*. On this book inspiring the "biocentric Constructivist discourse," see Chapter Four. Other works by Francé on the accomplishments of plants and animals owned by Mies included *Das Liebesleben der Pflanzen* (Stuttgart: Kosmos, 1921); *Das Sinnesleben der Pflanzen* (Stuttgart: Kosmos, 1905); *Denkmäler der Natur*; *Der Bildungswert der Kleinwelt* (Stuttgart: Franck, 1908); *Das Leben im Ackerboden* (Stuttgart: Kosmos, 1923); *Die Lichtsinnesorganen der Algen* (Stuttgart: Kosmos, 1908); *Die Seele der Pflanze* (Berlin: Ullstein, 1924); *Die Technischen Leistungen der Pflanzen* (Leipzig: Veit, 1919), *Die Welt der Pflanze* (Berlin: Ullstein, 1912); and *Urwald* (Stuttgart: Franck'sche Verlags-handlung, 1928).

Hans André, *Das Wesensunterschied von Pflanze, Tier und Mensch* (Habelschwerdt: Francke, 1924). André seemed to be connected with this publisher, as he introduced the books by Buytendijk and von Brandenstein, both published by Francke. Theodor Zell (Leopold Bauke), *Werkzeuge der Tiere* (Leipzig: Bios-Bücherei/R. Voigtländer, 1924). This book was the realization of a project Francé had initiated. See Francé-Harrar, *Mein fin de siècle*, 141. Also: Leopold Bauke, *Strefzüge durch*

die Tierwelt (Stuttgart, 1926). Frederick Jacobus Johannes Buytendijk, *Die Weisheit der Armeisen* (Habelschwerdt: Francke, 1925) and *Über das Verstehen der Lebenserscheinungen* (Habelschwerdt: Francke, 1925). Hermann Drechsler, *Aus der Werkstatt der Natur* (Berlin: Büchergilde Gutenberg, 1930). Maurice Maeterlinck, *Die Intelligenz der Blumen* (Jena: Eugen Diederichs, 1921). Judging by his writings, Maeterlinck was biocentric in his orientation. Martin Philipsohn, *Die Sinne der Pflanzen* (Stuttgart: Kosmos, 1912). Albert Wigand, *Der Individualismus in der Natur* (Habelschwerdt: Francke, 1925).

326. Buytendijk is quoted in Hans Kasdorf, *Ludwig Klages* (Bonn: Bouvier, 1984), 269. On Buytendijk's friendship with von Uexküll, see Gudrun von Uexküll, *Jakob von Uexküll*. Also: Bauke, *Werkzeuge der Tiere*, 6.

327. Hermann Kranichfeld, *Das teleologische Prinzip in der biologischen Forschung* (Habelschwerdt: Francke, c. 1925). Remigius Stölzle, *Der Ursprung des Lebens* (Habelschwerdt: Francke, 1925) and *Die Finalität in der Natur* (Habelschwerdt: Francke, c. 1925). In this connection, Mies was missing Adolf Wagner's important *Geschichte des Lamarckismus*, however.

328. Raoul Francé, *Bios: Die Gesetze der Welt* (in two editions: Munich: Hanfstaengl, 1921 and Leipzig: Alfred Kröner, 1926). On the importance of this book to Moholy-Nagy and others, see Chapter Four. C.f. also Francé's *Das Gesetz des Lebens* (Leipzig: T. Thomas, 1920); *Der Organismus; Die Kultur von Morgen; Die Wage des Lebens* (in two editions: Leipzig: Alfred Kröner, n.d. and Prien/Oberbayern: Anthropos, c. 1923); *Harmonie in der Natur; Plasmatik; Welt, Erde und Menschheit* (Berlin: Ullstein, 1928); *Zoësis* (Munich: Hanfstaengl, 1920).

Emerich Zederbauer, *Die Harmonie im Weltall, in der Natur und Kunst* (Wien: Orion-Verlag, 1917). Freiherr Béla von Brandenstein, *Metaphysik der organischen Lebens* Introduction by Hans André (Habelschwerdt: Francke, 1930). On Brandenstein as a Nietzschean, see István Hermann, "A XX. század elejének magyar filozófiájáról" [On early twentieth century Hungarian philosophy], introduction to Endre Kiss and Kristóf János Nyíri, eds., *A magyar filozófiai gondolkodás a századelőn* [Hungarian philosophical thinking early in the century] (Budapest: Kossuth, 1977), 21.

329. Ernst Fuhrmann, *Der Sinn im Gegenstand: Nebst Beitrag über die Bedeutung der Ornamente* (Munich: Georg Müller, 1923). On Fuhrmann, an important but -- during the 20s -- largely unpublished theorist of biocentrism, see Chapter Three. Siegfried Ebeling, *Der Raum als Membran* (Dessau: Dönhaupt, 1926). On this book, see Neumeyer, *The Artless Word*, pp. 171ff. Ernst Kropp, *Wandlung der Form im XX. Jahrhundert* (Berlin: H. Reckendorf, 1926).

330. On Wundt's psychology in the context of Neo-Romanticism, see Schall, "Rhythm and Art in Germany," 44-46.
331. Ibid., 44.
332. Biographical information on Klages is from Müller, *Das verzwistete Ich*, 14-16 and Ernst Hoferichter, "Ein Erforscher und Kunder des Lebens." On Ricarda von Huch, see Monika Fick, *Sinnenwelt und Weltseele. Der psychophysische Monismus in der Literatur der Jahrhundertwende* (Tubingen: Max Niemeyer, 1993). On Oskar Schlemmer and Huch, see Chapter Five. On the Kosmische Runde, see Schall, "Rhythm and Art in Germany, 1900-1930," (Ph.D. dissertation, University of Texas at Austin, 1989), 21-5. See also Chapter Three on George's circle, and on Ricarda Huch and Oskar Schlemmer.
333. Wiedmann, *Romantic Roots in Modern Art*, 37ff. Wiedmann draws parallels, for example, between the thinking of Hans Arp and Klages.
334. Hans Kasdorf, "Ludwig Klages im Urteil seiner Zeit," *Ludwig Klages* (Bonn: Bouvier, 1984).
335. Von Uexkull, *Bausteine zu einer biologischen Weltanschauung*. This project was taken up in the aesthetic sphere by figures such as Theo van Doesburg, Adolf Behne and Karl Ernst Osthaus. On this, see below and Chapters Three and Four.
336. On the remarkable importance of von Uexkull's thinking to that of his scientific contemporaries, and his relative obscurity today, see Harrington, *Reenchanted Science*, 34.
337. Besides Mies, Theo van Doesburg was familiar with von Uexkull's thought as early as 1915 when he cited *Bausteine zu einer biologischen Weltanschauung* in a review of the exhibition "Moderne Kunst" held at the Stedelijk Museum in Amsterdam. (Evert van Straaten, ed., *Theo van Doesburg 1883-1931* {The Hague: Staatsuitgeverij, 1983}, 41). He later listed von Uexkull with Descartes, Darwin and Kant in his list of important sources on the nature of consciousness. See *Principles of Neo-Plastic Art* (1925) (London: Lund Humphries, 1968), 10. Von Uexkull and his "biologische Weltbetrachtung," particularly as expressed in *Bausteine*, was Adolf Behne's central philosophical influence as he was preparing the critical ground for both the *Glaserne Kette* and 1920s International Style architecture. See Behne's "Biologie und Kubismus," 694-5, and *Die Wiederkehr der Kunst* (Berlin: K. Wolff, 1919), 109-11. Karl-Ernst Osthaus was studying von Uexkull's and his radical Empiriocritical epistemology on his deathbed. See Erben in: *Karl Ernst Osthaus: Leben und Werk* (Rechlinghausen: Aurel Bongers, 1971), 101.

338. Schall, "Rhythm and Art in Germany, 34. See also Bramwell, *Ecology in the 20th Century*, 178-9. In book form, this speech was published as *Mensch und Erde* (Jena: Eugen Diederichs, 1933).

339. Reported by Fellmann in *Lebensphilosophie*, 157. If Sullo-way is correct, and there was a concerted effort on the part of Freud and his colleagues to suppress the biologicistic origins of psychoanalysis, then this might account for Freud's relative absence from the interwar biocentric discourse. See Freud, *Biologist of the Mind*.

340. Ibid. On the importance of images, see 161-2.

341. See: Stephanie Poley, "'...und nicht mehr lassen mich diese Dinge los.' Prinzorns Buch 'Die Bildnerie der Geisteskranken' und seine Wirkung in der modernen Kunst," in Hans Geschke and Inge Jaschou, eds., *Die Prinzornsammlung* (Königsstein, Taunus: Atheneum Verlag, 1980); and Prokopoff, "The Prinzorn Collection and Modern Art."

342. Benjamin was a life-long devotee of Klages' who wrote to and about him. See Werner Fuld, "Walter Benjamins Beziehung zu Ludwig Klages," *Akzente* 28 (1981): 279-87. On Meyer's admiration for Klages, Prinzorn, and their psychology, see Chapter Five. On the others, see Kasdorf, "Ludwig Klages im Urteil seiner Zeit," 265. Strzygowski, one of the original "Friends of the Bauhaus," later supported Hitler's Nazi régime.

343. Raoul Hausmann, "Intellektuellismus, Gesellschaft und Gemeinschaft," 347.

344. Francé, *Der Weg zu mir*, 22-3.

345. Ibid., 46.

346. Ibid., 81-3.

347. Francé-Harrar, *Mein fin de siècle*, 26.

348. Ibid., 170 and Roth, "The Foundation of Bionics," 236.

349. Roth, "The Foundation of Bionics," 236. Francé, *Der Organismus der Craspedomonaden* (Budapest: Königliche Ungarische Naturwissenschaftliche Gesellschaft, 1897).

350. Ibid., 204.

351. Ibid., 205 and Francé-Harrar, *Mein fin de siècle*, 25.

352. See Francé, *Die Welt als Erleben*, 119-26 and *Der Weg zu mir*, 202

353. Roth, "The Foundation of Bionics," 236-7. In *Auf der Such nach Arkadien*, Wolschke-Bulmahn, dates the "Biologisches Institut" to 1908. (p. 84) Mies van der Rohe owned a book by Francé entitled *Pflanzenpsychologie als Arbeitshypothese der Pflanzen-physiologie* (Stuttgart: Franckh, 1909).

354. This was a society founded to publish inexpensive and easy-to-understand books on nature and science from a Monist perspective. It was operational until at least the late 1920s. See the notice for its publications in Francé, *Harmonie in der Natur*, back cover. The *Journal for the Theory of Evolution*, renamed the *Archiv für Psychobiologie* have been referred to below. In 1907 Francé started *Mikrokosmos*, a journal of microbiology. In 1909 he founded *Die Kleinwelt*, official organ of the Deutsche Mikrobiologischen Gesellschaft. That same year he also founded the Deutsche Naturwissenschaftlichen Gesellschaft, and *Natur*, its official journal; the *Yearbook for Microbiologists*; the *Microbiological Library* and he collaborated on the publication of a guide to scientific photography! (Roth, "The Foundation of Bionics," 237) See: Francé and M. Gambera, *Einführung in die wissenschaftliche Photographie* (Stuttgart: Franckh'sche Verlagshandlung, 1909).

355. Francé-Harrar, *Mein fin de siècle*, 141.

356. On his publishers: Von Bronsart, *Die Lebenslehre der Gegenwart*, 185-6. He worked with at least fifteen German publishing houses. The dearth of post-war literature on Francé is apparent from a glance at the list of publications on him in the Bibliography.

357. Engel-Hardt, *Francé als Graphiker*, 11 and Francé-Harrar.

358. Peter Nisbet has commented to me on this privately. Francé-Harrar, *Mein fin de siècle*, 141.

359. Wagner, "Einklang," *Francé: Eine Festschrift*, 3.

360. Francé, *Der Organismus*, VII.

361. Wagner, *Die Geschichte des Lamarckismus als Einführung in die Psycho-Biologische Bewegung der Gegenwart*, IV. See also Francé *Zoësis*, 19.

362. Wagner does not even mention Monism and the Bund in his 1908 book.

363. On Francé's early flirtation with Socialism, see Hanns Fischer, *Raoul H. Francé. Das Buch eines Lebens* (Leipzig: R. Voigtländer, 1924), 189.

364. On Landauer, his role in the Soviet and his death in Munich in 1919, see George Woodcock, *Anarchism: A History of Libertarian Ideas and Movements* (New York: Meridian Books, 1962), 432. To determine whether this was a random act rather than one motivated by some factor connected to Francé is yet to be determined by research.

365. Behne, "Biologie und Kubismus," 694.

366. Francé, *Der Weg zu mir*, 177.

367. Francé, *Das Buch des Lebens*, 24-5. Von Bronsart, *Die Lebenslehre der Gegenwart*, 75; Fischer, Raoul H. Francé. *Das Buch eines Lebens*, 166. See also his description of Biozentrik as a Monist project, in Francé, *Die technische Leistungen der Pflanzen*, p. III.

368. Francé, *Die Welt als Erleben*, 15. On the introduction of this philosophy, see *Zoesis*, 10.

369. Stefan Zweig, "Francé der Bildner," *Francé: Eine Festschrift*, 33.

370. Philip Steadman, the first to implicitly recognize Francé's importance (he devotes a chapter to it in his book), is strangely silent when it comes to actually articulating this importance. (Steadman, *The Evolution of Designs: Biological Analogy in Architecture and the Applied Arts* {Cambridge: Cambridge University Press, 1979}, Chapter 11.) While Andreas Haus remarked on Francé's importance to Moholy-Nagy as early as 1978, and John Elderfield commented on his significance in relation to Kurt Schwitters and El Lissitzky in 1985, Peter Nisbet was the first (in 1987) to clearly, if restrainedly and briefly, articulate Francé's more general significance. Haus, *Photographs and Photograms of Moholy-Nagy* (1978), 13; John Elderfield, *Kurt Schwitters* (New York: Thames and Hudson, 1985), 139; Nisbet, *El Lissitzky*, 30. Fritz Neumeyer has recognized the importance of Francé to the work of Ludwig Mies van der Rohe in his book *Mies van der Rohe, das kunstlose Wort* (Berlin: Siedler Verlag, 1986), 299. Basing himself on Neumeyer's work, and discussing functionalism and the "Bauhaus-Style," Wulf Herzogenrath writes: "So gesehen wird Raoul H. Francé mite seinem naturwissenschaftlichen Veröffentlichungen zu einem Kronzeugen diese Zeitgeistes." *Bauhaus-Utopien: Arbeiten auf Papier* (Stuttgart: Edition Cantz, 1988), 30.

371. Stanislaus von Moos, "The Visualized Machine Age," in Thomas P. Hughes and Agatha C. Hughes, eds., *Lewis Mumford: Public Intellectual* (London: Oxford University Press, 1990), 407.

372. Raoul Francé, "Die Pflanze als Erfinder," *Das Kunstblatt* 8, no. 1 (January 1923), 5ff.

373. Nisbet, *El Lissitzky*, 28-30.

374. Neumeyer, *The Artless Word*, 102-6.

375. Ibid.

376. Hannes Meyer, "Die neue Welt," *Das Werk* 13, no. 7 (1926): 205-24.

377. On Ring see *Hanna Höch: Eine Lebenscollage* volume 2, 295-6. On Friedrich Kiessler and Honzik, see Honzik, "A Note on Biotechnics," *Circle* (1937) (New York: Praeger, 1971), 256-62 and Steadmann, *The Evolution of Designs*, 163-7. Ella-Bergman-Michel's works *Bios-Blatt* and *Bios-Radierung* of 1919 and 1920 suggest that she was reading Francé. Reproduced in *Die Erfindung der Natur*, 123-24. Hans Erni also produced a work entitled *Bios*, tempera, 150 X 120 cm., 1942. (Reproduced in: Jean-Christophe Ammann, ed., *Zeitgenossen sehen Hans Erni* (Lucerne: Kunstmuseum Luzern, 1972), 74.) On Kállai, see Chapter Five and on Ebeling see Chapter Four.

378. Fritz Stern, "National Socialism as Temptation," in *Dreams and Delusions* (New York: Knopf, 1987), Chapter Six.

379. Hausmann, "Der Häusserbund bekommt 22,800 Stimmen!," 89.

380. Martin Müllerott, "Francé," *Neue deutsche Biographie* no. 5 (Berlin: Dancker & Humbolt, 1961), 313.

381. Francé, *Die Kultur von Morgen*, 114.

382. Francé, *Plasmatik*, 18-19.

383. Francé's biographer Fischer lists Dinkelsbühl, Weimar, Salzburg and Berlin as the cities he loved. (In: *Raoul H. Francé*, 183) Francé would likely have added Budapest to this shortlist. (See Francé, *Der Weg zu mir*, x)

384. Hitler, *Mein Kampf*, 123 and Francé, *München*.

385. See Francé, *Bios*, vol. 1, 225-6. Francé's valorization of social insect societies contrasts with, for example, Maurice Maeterlinck's position, which recognized the inherent cruelty of that system. See, e.g., *La Vie des termites* (Paris: Charpentier, 1927) and *La Vie des fourmis* (Paris: Charpentier, 1930). On Maeterlinck and his view of insect societies, see Bettina Knapp, *Maurice Maeterlinck* (Boston: Twayne, 1975), 161-2. This pessimistic view of insect societies is echoed by Winnipeg artist Aganeatha Dyck, who employs bees in the production of

her artworks. Like Maeterlinck, whose father was a bee-keeper, Dyck's husband is an apiarist, and so she has more direct contact with the insects than Francé had. (Personal communication with Dyck, February 1997.) Thanks to Serena Keshavjee for pointing out the relevant passages in Knapp's book to me.

386. On "racialism" as not necessarily a "racist" or right-wing phenomenon, see Bramwell, *Blood and Soil*, 206. Also: Francé, *Das Buch des Lebens*, 159.

387. Francé-Harrar, *Mein fin de siècle*, 220. On Spengler, see 190-7. Of course it is also possible that Francé-Harrar opposed her husband's National Socialist affiliation. Gudrun von Uexküll also plays down her late husband's flirtation with the Nazis around 1933, choosing to highlight his (genuine) concern at the treatment of Jews in the Nazi state. (See her *Jakob von Uexküll* and the note above dealing with this question.)

388. Francé, *Das Buch des Lebens*, 250.

389. Fischer, *Raoul H. Francé*, 189.

390. On Zweig's praise for Francé, see below. I have not come across anti-Semitic statements in Francé's writings.

391. At least five of his books were published by Ullstein. See the *National Union Catalogue Pre-1956 Imprints*, vol. 180, 226-30.

392. *Die Welt der Pflanze* (Berlin, 1912) and *Die Gewalten der Erde* (Berlin, 1919). See the list "Werke von Raoul H. Francé" on the back cover of *Francé. Eine Festschrift*.

393. Francé, *Der Weg zu mir*, 52. On Langbehn, see Gill Perry, "Primitivism and the Modern," 35.

394. *Francé: Eine Festschrift*, unpag.

395. Francé, *Der Weg zu mir*, 53.

396. Roth, "The Foundation of Bionics," 236. Given Cohn's name, I think it safe to assume his Jewish origins.

397. See Fischer, *Raoul H. Francé*, 189.

398. *Ibid.*

399. Wolschke-Bulmahn presents evidence for this in *Auf der Suche nach Arkadien*, 85, 88-9.

400. Wolschke-Bulmahn, *Der Suche nach Arkadien*, 88-9 and Walter Zimmermann, *Sozialistische Monatshefte* 28, no. 2 (February 1922): 122-3.
401. Paul Krannhals, "Ein Wegweiser zur völkischen Kultur. Zum 50. Geburtstag von Raoul H. Francé," *Hellweg* 4, no. 21 (2 May 1924): 388-9.
402. Von Bronsart, *Die Lebenslehre der Gegenwart*, 57. Von Bronsart may have been related to Hans Bronsart (1830-1913), former director of the Weimar Hoftheater. See: Henry van de Velde, *Geschichte meines Lebens*. Hans Curjel, ed., (Munich: R. Piper, 1962), 522. Hausmann had warned in his review of *Die Kultur von Morgen* of Francé as a self-styled "Führer und Lehrer der Menschen." "Intellektualismus, Gesellschaft und Gemeinschaft": 347.
403. Martin Müllerott, "Francé," in *Neue Deutsche Biographie* vol. 5 (Berlin: Dancker & Humboldt, 1961), 314.
404. Wolschke-Bulmahn, *Auf der Suche nach Arkadien*, 84.
405. Ibid.
406. Ibid., 85.
407. Francé, *Welt, Erde und Menschheit*, 223-6.
408. Prinzhorn is another example of a Nazi-sympathiser in the early thirties who was not anti-Semitic. See Geinitz, "Hans Prinzhorn": 60-1.
409. Raoul Francé, *Von der Arbeit zum Erfolg. Ein Schlüssel zum besseren Leben* (Dresden: Carl Reissner, 1934), unpag.
410. Bud, *The Uses of Life*, 63.
411. Wolschke-Bulmahn, *Auf der Suche nach Arkadien*, 84.
412. See Harrington, *Reenchanted Science*, and Bramwell, *Blood and Soil* on the anti-Organicist backlash.
413. On the Francés' life in Dubrovnik at this time, see Raoul H. Francé and Annie Francé-Harrar, *Sehnsucht nach dem Süden* (Leipzig: Julius Kittls Nachfolger, 1938), 5.
414. Bud intuits the ambiguities of Francé's reception. While he notes that Fritz Neumeyer held that "Francé's thoughts provided the solace that the Bauhaus spirit would live on in the wake of Hitler's victory," Bud is also aware of Giessler's Nazi appreciation of Francé's *Biotechnik* in 1938. *The Uses of Life*, 62-3.

CHAPTER THREE

Biocentrism and Modernism in Early Weimar Germany: The Context and Roots of Moholy-Nagy's Biocentric Pedagogy

Tragedy irradiates ... a Dionysiac condition, tending toward the shattering of the individual and his fusion with the original Oneness. (Nietzsche 1872)¹

Monism ... recognizes one sole substance in the universe, which is at once "God and nature"; body and spirit (or matter and energy) it holds to be inseparable. (Haeckel 1899)²

Auf die Epoche physikalisch-chemischer Weltbetrachtung, die zum Materialismus führte, folgt jetzt naturgemäss die biologische Weltbetrachtung. (Behne 1916)³

In all the arts, the notion of "nature" has never had any other meaning except that the artist and his work are themselves part of nature. (Taut 1916)⁴

Die grosse Errungenschaft des neuen Zeitgeistes ist das biologische Denken. (Stadelmann 1916)⁵

Im Kosmos der Einheit ist der Leib nicht mehr Tempel der Gottheit, sondern ihr Körper. Leib und Seele sind gleichen Grundes Wurzel, sind eins. Wir kennen nicht einen geisthaften Inbegriff einer leibhaftigen Welt Wir sind Gott.... Der ruhende, zuständige Mensch lebt seine Einheit mit dem Kosmos. (Lucia Schulz 1919)⁶

Was ist neu auf dieser Erde? Die Antwort: Ausschliesslich die Erde selbst, die über alle, angeblich unumstösslichen Wahrheiten der Menschen hinaus, uns zwingt, ihrer Atmosphäre zu folgen. Der Mensch ist eine Form der Erd-Atmosphäre, die er weder mit dem Logos noch mit dem ethischen Gesetz zu zwingen vermag, sich vor ihm selbst aufzuschliessen. (Hausmann 1921)⁷

The unity of a work of art is manifest in its wholeness and in the total interdependence of its 'form and content.' That is to say, this 'dependence' is merely a Dualist fiction, because for me 'form and content' are one. (Moholy-Nagy 1922)⁸

The artist cannot do without his dialogue with nature, for he is a man, himself of nature, a piece of nature and within the space of nature. (Klee 1923)⁹

Die Natur ist eine schöne Sache. (Hausmann 1921)¹⁰

Es gibt nur eine, in sich gegensätzliche Einheit der Natur. / Ein neues einheitliches grosses Weltbild muss daher allen Dualismus beseitigen.... (Hausmann 1924)¹¹

If you can see the essence of a work of art then it appears to you ... as a unity ... as a thing that grows out of itself .. and which does not differ in essence from other ... entities in Nature. (Schwitters 1927)¹²

Our work is not ... a system for acquiring cognition of nature, it is a limb of nature... (Lissitzky 1924)¹³

...even lemons fall to their knees before the beauty of nature. (Arp 1925-26)¹⁴

i pump nature, you pump art. (Arp 1931)¹⁵

The view of the utopian avant-garde as always being antithetical to the "natural" is persistent in the literature. As Patricia Railing notes, "To claim nature as the source of art ... and machine no more than a tool is unusual in the writings of the avant-garde."¹⁶ Stephen Mansbach articulates this view:

Mondrian's [antipathy to green] though idiosyncratic and hyperbolic, was representative of the disdain in which progressive artists held nature This rejection of nature was ... two-fold: as artists, they felt that nature (physis) was impotent as an inspiration and a model for creative production, and as individuals ... they rejected nature as an irrational force lying outside man's control.... Nature seemed to foster an irresponsible cult of the individual and it appeared to sanction an indefensible belief in a natural social hierarchy. This ... resulted inexorably in war, class stratification and alienation.... [N]eeded to redress these prevailing tragic conditions was an anti-natural art that would prepare mankind for future integration with society, environment and self.¹⁷

Mansbach cites Naum Gabo as an artist whose "rejection of nature and naturalism was, like that of his contemporaries [Lissitzky, Moholy-Nagy, Gropius], seemingly absolute." Focus-

ing on Moholy-Nagy, Mansbach continues: "Like so many others, Moholy turned to the machine as both model, and inspiration for a non-natural art that would lead men inevitably to a sublime social and spiritual harmony." Mansbach, part of whose difficulty lies in his conflation of "nature" and "naturalism," intuits the contradictory character of his argument when he writes that "[f]or Moholy, as for most of the utopian artists early in the century, abstract art was perceived, paradoxically, as leading to the fulfillment of man's deepest biological and social nature, once abstraction had overcome the tragedy of nature...."¹⁸ Complicating Andreas Haus' critique of positions such as Mansbach's, that "die technikbewusste Avantgarde keineswegs die Natur hasste, sondern nur die sentimentale bourgeois Naturromantik," I solve Mansbach's paradox by arguing that rather than "abjuring nature," some of these artists sought its authority in realizing their aims.¹⁹

Mansbach's work is emblematic of a shortcoming in art history, which by virtually ignoring the early 20th century biocentric discourse has failed to contextualize modernist culture. While his arguments are pertinent to Mondrian and Van Doesburg, they are incorrect with respect to Moholy-Nagy and El Lissitzky. In the case of artists such as Paul Klee, Franz Marc and Wassily Kandinsky, who employ a conventional vocabulary when discussing nature, their biocentrism marks them as tangential to the mainstream. Since the contemporary context is unknown, this interest is explained as an anomaly, as a direct outgrowth of Romanticism, or as an "occult" phenomenon. Thus it is the science historian Peter Bowler who recognized what art historian Mark Roskill has not: their writing demonstrates that Klee and Kandinsky were not mere nature enthusiasts or occultists, rather, they were "influenced by the mystical aspects of monism."²⁰ Education historian Eleanor Jain has put together a list of artists, including Marc, Klee and Kandinsky, who exhibited the concerns and vocabulary of *Lebensphilosophie* in their texts.²¹ As for artists such as

Moholy-Nagy, Mies van der Rohe and El Lissitzky, whose language concerning nature is unfamiliar and whose styles of artistic production are orthogonal, their concerns with nature and the organic have been ignored or denied. It is a rare occurrence that art historian Timothy Benson should recognize that "monists made science more palatable to artists like [Johannes] Baader and [Raoul] Hausmann by seeking to reintegrate the apparently displaced man described in mechanistic doctrines of nature."²² While unfamiliar with biocentrism, Railing is unique in pointing out the pervasiveness of organic discourse to the avant-garde, which "runs, sometimes like a trickle, sometimes like a torrent, through [it] ... from the early Cubo-Futurist days to the late 1920s."²³ Someone as close to Moholy-Nagy as his wife Sibyl, however, unequivocally recognized him to be a vitalist, and Moholy's friend, the art critic Ernő Kállai, interpreted the history of Modernist art in 1931 as a reaction to technology and a retreat into "nature."²⁴

In this chapter I take strategic soundings of early 20th century German culture and find that biocentrism was inherent to the *Jugendbewegung*, to Activism, to Berlin Dada, to the *Gläserne Kette*, to the communard movement and to the Bauhaus. These having formed the contexts in which Moholy-Nagy operated, it becomes less eccentric to suggest that Moholy-Nagy's pedagogical project was at base biocentric. In Chapter Four I argue that his New Vision, which aestheticized scientific photography, making it accessible, was itself a resultant of the biocentric Constructivist discourse inspired by Raoul Francé's biocentric philosophy.

1. Biocentrism, the *Jugendbewegung* and the Weimar Avant-garde

a. The Youth Movement and Biocentrism

In his anti-Haeckel polemic, Daniel Gasman argues that Haeckelian Monism was an important component of the German

Youth Movement. Jürgen Wolschke-Bulmahn has drawn attention to the environmental consciousness central to this *Jugendbewegung*.²⁵ For example at the "Hohe Meissner," the 1913 founding meeting of the *Wandervogel* offspring, the *Freideutsche Jugend*, one of the most acclaimed speeches was Ludwig Klages' "Mensch und Erde," an early call for ecological balance and environmental preservation.²⁶ Ulrich Linse holds that this talk must be considered as "einer der ganz grossen Manifeste der radikalen Ökopax-Bewegung in Deutschland."²⁷ Klages railed against the ones who "in blinder Wut die eigene Mutter, die Erde, verheeren . . . , bis alles Leben und schliesslich sie selbst dem Nichts überliefert [sind]."²⁸ Anna Bramwell has observed that Klages' text "contains most of the themes of today's ecologists; that matriarchy is better than patriarchy, that numberless animal species have been exterminated by man, that the fur and feather trade is wicked, that civilisation and *Kultur* kills the spirit, that economics is opposed to real values."²⁹ Crucial here is that the Youth Movement did not consist merely of hikers imbued with a nationalistic sense of the depths of *Natur* and *Wald*; of *Blut und Boden*.

Already the first *Wandervogel* generation was strongly affected both by Nietzsche's anti-anthropocentrism and by Haeckel's populist nature-centric Monist manifesto *Die Welt-rätsel*, first published in 1899.³⁰ While the writings of Darwin, Haeckel, and other natural scientists produced the medium within which Nietzsche's mutating radicalism could coagulate, his powerful, poetic articulation of the consequences of positivist science's disenchantment of the world in turn affected Haeckel's thought, or at least the way in which Haeckel's "natural" morality -- his opposition to religion and later to the concept of "God," his focus on the earth and its life -- were received. Some of the keener of the *Wandervogel* would then have followed the emergence of the *Monistenbund* in 1906. In the teens and early twenties, as the *Jugendbewegung* coalesced, there emerged a genuine environmentalist conscious-

ness out of the Nietzschean, nature-centric neo-Romanticism of the Monist movement and the *Wandervogel* wave.

b. Youth Movement and Avant-Garde

i. Nietzsche and Marc

This Youth Movement was linked to the German avant-garde, whose great pre-war hope, Franz Marc, was thoroughly -- and famously biocentric. Because of his anti-anthropocentrism, interest in the natural sciences, his critique of bourgeois morals, and his affirmation of the importance of art, furthermore, Nietzsche was another common denominator:

What Nietzsche sowed, Expressionism reaped. Like him, Expressionist artists participated in the scientific learning of their age and yet opposed its materialism and its positivism.... [They] ... not only read Nietzsche, but also followed the latest developments in the sciences ... and pseudo-sciences of their day.³¹

Charles Kessler has demonstrated the (Dionysian) "yearning for a deeper emotional bond with the wellsprings of nature" among the Expressionists and has detailed their links with the *Reformbewegung*, including the Youth Movement, *Freikörperkultur*, and the *Naturheilmovement*.³² August Wiedmann has pointed out that "Expressionist art and literature were permeated by [a] titanic striving for wholeness."³³ Corona Hepp, Janice Schall, Eleanor Jain, Donald Gordon, and Werner Kindt have referred to the parallels and links between Nietzschean thinking, the Bauhaus, *Lebensphilosophie*, Expressionism, and the *Reformbewegung*, including the Youth Movement and the *Wandervogel*. As with Henry van de Velde, Marc, Edvard Munch, Max Beckmann, Otto Dix, Adolf Behne and Bruno Taut, such ties are evident in the cases of the future Bauhaus professors Klee, Kandinsky, Herbert Bayer, Oscar Schlemmer and Johannes Itten.³⁴ Salomo Friedländer, Hausmann and Baader's 1915 plans to entitle a journal "Erde" echoed Klages' "Mensch und Erde" speech of 1913.³⁵

Marc's affinity to the nature-centric aspect of the

Reformbewegung is particularly evident. He wrote of his desire to heighten his "feelings for the organic rhythm of all things, to achieve pantheistic empathy with the throbbing and flowing of nature's bloodstream."³⁶ Soon after his death in 1916 Klee wrote that "He responds to animals as if they were human. He raises them to his level.... In Marc, the bond with the earth takes precedence over the bond with the universe."³⁷ As Goldwater articulates it, "Marc's purpose ... is to express a pantheistic conviction, to convey the underlying harmony of the universe, lost by modern man, in symbolic canvases 'that belong on the altars of the coming spiritual religion.'³⁸ That this "religion" -- like Haeckel's "Monistic Religion" -- had *Natur* as its focus, is made evident through Marc's iconography in which animals function both as guardians of our deep connection to the natural realm, and as potential victims of this realm's violation by our technologized society. Writing of Marc's 1911 painting *Der Stier*, Kállai states that the animal "scheint erst im Keime seines Wesens zu leben, in jenen Naturgründen, in denen alle Geschöpfe verwandschaftlich beisammen liegen."³⁹ (Fig. 3-1) The curvilinear forms and their tendency towards central compositions and abstraction, were among the most important premonitions of the biomorphic Modernist style of the 20s and 30s.

Neo-Vitalist ideas were so widespread that when discussing the content of the Berlin Dadaist periodical *Die freie Strasse*, Timothy Benson refers to "the usual Bohemian staples of Nietzsche, Bergson, Simmel, Strindberg, Whitman, Dostoevsky...."⁴⁰ But after *Die Welträtsel* and the founding of the *Monistenbund*, it is insufficient to characterize this yearning for "life" and "unity" as merely romantic. At that time the yearning for wholeness and the revival of the vitalist/pantheist idea of a universal force in nature were related to the *neue Naturphilosophie*, to Monism and Neo-Vitalism; to *fin-de-siècle* biocentrism.⁴¹

ii. Haeckel

More direct links can be pointed to between Haeckel and the avant-garde. Haeckel's publication of the album *Kunstformen der Natur* in 1899 was intended to offer artists the hitherto largely untapped *Formenwelt* of the microscopic and the undersea as inspiration or as model, one which would result in art that would induce a moral appreciation in the viewer of the value of nature:

The remarkable expansion of our knowledge of nature, and the discovery of countless beautiful forms of life ... have awakened ... a new aesthetic sense ... and thus given a new tone to painting and sculpture.... [E]xpeditions ... brought to light an undreamed abundance of new organic forms...⁴²

Kunstformen der Natur had a profound effect on *fin-de-siècle* artists and architects -- particularly in Munich -- such as the Swiss Hermann Obrist and the German August Endell.⁴³

iii. Hausmann and Berlin Dada

Less recognized is the influence exercised on avant-garde artists by Haeckel's Monism during and after the First World War. For example, among the Berlin Dadaists both Hausmann and Baader were enthusiastic Haeckelians. As Benson explains Hausmann's position at the time, he attempted what the *Monistenbund* itself essayed, that is "a consistent pursuit of a synthesis of the conflicting tendencies associated generally with reconciling *Lebensphilosophie* and Positivism.... Hausmann's anti-anthropocentrism is in accord with many of the Idealist and Romantic responses to Kant's exploration of experience..."⁴⁴ Indeed Hausmann acted as a conduit between Monism and the Berlin avant-garde scene of the early 1920s, as his biocentric Anarchist attack on Raoul Francé in 1923-24 demonstrates.⁴⁵ By 1922, as is evident from the passage quoted at the start of this chapter, for Hausmann's friend Moholy-Nagy, "Dualism" was a bad word.

iv. *Gläserne Kette*

A particularly salient example of relations between Monism, emergent interwar biocentrism, and the avant-garde, is that of the *Gläserne Kette* architects: Bruno Taut, Hermann Finsterlin, Wenzel Hablik, the Luckhardt brothers, Hausmann's friend Jefim Golyscheff, and their supporter Adolf Behne were deeply biocentric.⁴⁶ Like his friend Rudolf Steiner, Taut combined occultism with his biocentric ideas, which were expressed through both *vitalmystisch* writings and an adherence to Kropotkinian anarchism.⁴⁷ In the passage of 1916 quoted above we witness Taut's view of humanity as part of nature. That same year Behne cried that "Kunst ist niemals etwas anderes als Natur!" and Finsterlin said simply that "the architecture of man is a biogenetic phenomenon."⁴⁸ In his critical writings Behne's obsessive concern with "unity" is typically Monist, while in his Glass Chain letters Wassily Luckhart expressed an Ostwaldian Monist *Weltanschauung*: "The striking thing in ... natural phenomena is the consciousness of that great unity in nature, which reveals itself to the eye as the sum of all those infinitely many single motifs of homogenous or similar type, which are all subject to one and the same perceptible law of movement."⁴⁹ Taut begins his 1919 manifesto with the Monist-Vitalist declaration that he and his group are "Suchende nach der Kunst; denn die Kunst, die eins ist mit dem Leben, diese Kunst gibt es nicht."⁵⁰

One can understand how the crystal, a central metaphor of the *Gläserne Kette*, could be seen as organic, since for Haeckel and the Monists, crystals -- ensouled like plants and animals -- linked the animate and inanimate orders of unified Being.⁵¹ Thus Wassili Luckhardt, anticipating Francé's "technical *Grundformen*" of nature writes, "In going back to original forms [*Urformen*] is it not possible to reach basic architectural elements, which in their invisible power of expression could convey the impression of earthgrown creation? After all, stones, plants, etc., are built up out of primeval

crystals."⁵² For Finsterlin, however, it was not the crystal that was the *Urform*, but Haeckel's primeval slime, out of which life generated itself spontaneously.⁵³ In the design of Wenzel Hablik, the biotic and the crystalline merged into an indivisible, stylistic whole.⁵⁴ In Finsterlin and Wassili's brother Hans, there were direct links between Monism and Taut's circle: while Hans discussed Mach's theory with Ostwald, Haeckel's son Walter was Finsterlin's friend. In fact Finsterlin was retained to paint a portrait of the father for the museum established in 1920 in the "Villa Medusa," Haeckel's house in Jena, after his death in 1919.⁵⁵

v. Adolf Behne

The Heinrich Wölflin-trained art historian Behne was the theorist and critical supporter of the *Gläserne Kette*. He was involved in the biocentric discourse, well-versed in Haeckelian/Ostwaldian Monism, as well as in the emergent biocentric critique of it.⁵⁶ He was unequivocal concerning the biocentrism of Hermann Finsterlin, even in the mid twenties, during the period of the "Ring": "Wollen wir ... sehen, bis zu welcher letzten Konsequenz ein romantisch-pantheistisch gefärbter Funktionalismus führt, so betrachten wir am besten die Entwürfe Hermann Finsterlins ... die Annäherung des Hauses an Formen der organischen, der wachsenden Natur."⁵⁷ In an article of 1916 entitled "Biologie und Kubismus" and published in the Activist journal *Die Tat*, Behne argued that the biocentric theorist Jakob von Uexküll's model concerning organic development in nature should be applicable to artistic production even if von Uexküll himself opposed Expressionism, and that with the decline in authority of the *Monistenbund* due to its "materialism," artists should turn from Haeckel and Ostwald to von Uexküll and his book *Bausteine zu einer biologischen Weltanschauung* for guidance: "Besonders bei der jungen Generation, die sich heute um eine Erneuerung der Kunst und der Kultur bemüht, sollte das schöne Buch begeisterte Aufnahme

finden."⁵⁸ A similar scenario would play itself out in the case of Weimar avant-gardists who came to champion Raoul Francé's post-*Monistenbund* biocentrism, despite Francé's dislike of avant-garde art.

Later Behne added *Das Problem der exzentrischen Empfindung* to his list of recommended books, in which Ernst Marcus developed the psychovitalist (i.e. psychobiological) views of Kant, Gustav Fechner, Ernst Mach and Richard Avenarius (whence Raoul Francé's position derived) to an extreme conclusion similar to that of Jakob von Uexküll, whereby the perceiving subject was actively involved in the constitution of reality. In Marcus' view, light itself was an organic product of the brain, rather than an emanation from, or reflection of, the perceived object.⁵⁹ To understand the full effect that this position had on the Berlin avant-garde, it is worth looking at its reception by another of its members. Marcus' psychobiology was understood in a radical manner by his student, Hausmann's and Baader's associate, Salomo Friedländer,

[dass] nicht ... unser Anschauungsvermögen sich nach den Dingen, sondern umgekehrt die Dinge sich nach unserem Anschauungsvermögen richten. Die gesamte Zeit, der gesamte Raum sind Organe unseres Ich, dessen Logik, dessen Vernunft- und Verstandsgesetze, dessen gesetzgebender Geist sich zur Natur nicht empfangend und erleidend, sondern dermassen tätig und gebend verhält, dass erst durch diese seine Tätigkeit die Natur zur Natur wird.⁶⁰

Thus, in his book *Die Wiederkehr der Kunst*, a von Uexküllian-biocentric and Marcusian-psychovitalist manifesto, Behne refined his definition of nature:

Schönheit ist nicht weiter zu definieren als: "das von göttlichen, kosmischen Formungswillen Geformte" Schönheit umgibt uns auf dem Stern Erde in dem, was wir gewöhnlich meinen, wenn wir von der "Natur" sprechen. Nach dem mangelhaften und unklaren Sprachgebrauch ist alles, schlechthin alles Natur. Aber empfindungsgemäss ist die Natur doch wohl das einheitliche Erlebnis der alles auffangenden Sinne, jenes Erlebnis, in welchem das spezifisch Menschliche schweigt, in welchem der Mensch ein Splitterchen der Welt wird.⁶¹

The organicism of the *Gläserne Kette* is made clear by Behne, who -- echoing Kandinsky -- maintained that "das Kunstwerk ist ein geistiger Organismus," and that "[t]he contemplation of the roots is especially important for us. Our works must grow organically out of the simple primitive cell."⁶² This organicism is also evident in Hans Luckhardt's statement that "The building must be so formed that it creates the same inner unity with the earth and sky that the tree does."⁶³ Hablik commanded simply "Glaubt nur an die Natur! Ehret ihre Gesetze!"⁶⁴ Indeed Klages' critique of human *Geist* is present in the writings of the *Gläserne Kette*. In 1918, echoing Francé and Klages, Behne wrote:

Natur bleibt uns das einheitliche reine Sinnenerlebnis des Menschen. In diesem Erlebnis ... schweigt das spezifisch Menschliche, der Mensch wird zu einem Splitterchen des Kosmos. Und diese tiefe wunderbare Einheit des Menschen mit der Welt, dieses Erlebnis, das wir Natur nennen, wird zerstört durch das Wirken des Geistes.... Die Natur ist das Prinzip der Einheit, der Geist das Prinzip der Scheidung.⁶⁵

Given Behne's and Taut's role in the "Ring," the Modernist architects' group emergent from Mies' and Häring's studio in 1923-24, it seems reasonable to suggest that the move from the Expressionist biomorphism of the Glass Chain to the orthogonal Modernism of the Ring was a stylistic shift which -- like the analogous transformation occurring within the biocentric discourse -- left the architects' nature-centrism intact. With Behne and Taut in the leadership of the *Arbeitsrat für Kunst*, the *Novembergruppe*, and the Glass Chain; and with Hausmann and Baader at the core of Berlin Dada; biocentrism was endemic to the German post-war, post-Expressionist avant-garde.

2. Moholy-Nagy, *Lebensreform* and Biocentrism

Out there -- war. Here its thunder dully thuds.
 A bird chirps and the myriad sounds and
 Fleeting hues of gossamer life rise.
 The swallow flies, the fork-tailed swallow!
 The shadow's violet silk spreads out.
 A thrush's whistling like gurgling gold

Honey flows from the rotten rind
 And the delicate seed bursts
 Fruitful and happy.

Clouds, those marvellous plants of my life,
 Float in blue froth and flower
 Their wispy petals on high,
 As if on a velvet gown of some maiden's dream.
 (Moholy-Nagy, "Forest. May. War." 1918)⁶⁶

As we shall see, Moholy-Nagy continued Haeckel's -- and Francé's -- project of making the natural imagery of scientific research available to artists. In the late 20s, through his New Vision, he effected the aestheticization of this scientific imagery in Weimar Germany. This process made the biomorphic *Formenwelt* -- an important factor for the development of biomorphic Modernism as a style -- readily available to interwar artists. I argue that like Haeckel's and Francé's aesthetics, Moholy's New Vision was rooted in his biocentrism.

We have seen that International Constructivists such as Moholy-Nagy have been characterized to be "anti-natural" and "technocentric." As we shall see in Chapter Four, however, there was in Russia an "Organic Constructivism" present most strongly in the work of Vladimir Tatlin and Lazar El Lissitzky. By introducing Moholy-Nagy into the discussion, I wish to initiate thorough treatment of the work of an International Constructivist within the context of biocentrism. I will argue that Moholy's oeuvre -- like Hausmann's -- drew from a wide range of intellectual and artistic sources, but was both formed and directed by a normative biocentrism. As Floris Neusüss has written (without employing the requisite terminology): "Moholy-Nagy war ein spiritueller Materialist, der grösstmögliche Gegensätze in Harmonie zusammenzufügen suchte."⁶⁷ I wish to expand on the view Haus expressed in his 1978 study of Moholy's photography:

Überspitzt liesse sich ausdrücken, dass Moholys praktische wie theoretische Arbeit komplementäre Aspekte eines Dritten sind, das als metakünstlerische, pädagogisch orientierte "Lebensphilosophie" mit dem Ziel erscheint, den Menschen zu einem be-

reicherten und aktiven Genuss seiner modernen Lebenswelt zu führen.⁶⁸

While I take Haus's punning use of "*Lebensphilosophie*" more literally than he does, and while our approaches differ, our agreement (along with Alain Findeli) that the core of Moholy-Nagy's project was a normative-pedagogical one, forms the basis for this line of research on him. As Sibyl Moholy-Nagy wrote in her biography of László, "The most important contribution the Bauhaus years made to Moholy's development was his acceptance of teaching as a life task.... He discovered the unity of doing and being, the organic oneness of living soundly and producing creatively. This became the keynote of his teaching program." And in a direct reference to one of Moholy's most important sources, Raoul Francé, she wrote, "He accepted the sharing of his life as biological law because it was *bios* -- the interaction of vital impulses, that stimulated man to work for his emotional fulfillment."⁶⁹ Accordingly, I begin this discussion by placing Moholy's early émigré years in Germany, those he spent with his first wife Lucia Schulz, into their proper context of the German Youth Movement, specifically the *Freideutsche Jugend*, which as we have seen had a biocentric component. An exposition of the biocentric basis of Moholy's pedagogy and aesthetics of New Vision follows.

a. The Hungarian Background

As is evident in Moholy's poem "Forest. May. War.", not only was he a Pacifist by the waning months of his military service in 1918, he was also a keen observer of nature. Also, as his review that same year of the Budapest poet Árpád Garami's poems about a boy's sexual awakening illustrates, Moholy was familiar with the discourses of *Bergsonisme* and *Naturromantik*: "Employing a cosmic vision [Garami] transforms the sterile lover into the purposive, creative Earth, that the curse might finally be lifted. This self-redemptive and self-consoling feeling is manifest little by little in the desire

for a mythic union with nature."⁷⁰ Moholy's familiarity with German and American nature romanticism would have derived from his education in the German classics -- he won a German translation prize in high school -- and his close friendship with the critic Iván Hevesy, an early translator of Walt Whitman's poetry.⁷¹ Moholy's acquaintance -- rather than familiarity -- with Bergson's ideas, would have originated in at least two sources.⁷² First, Moholy's literary mentor during his early creative years (when his ambitions were more literary than artistic) was the important Modernist poet Mihály Babits, who was among the first to write about Bergson in Hungary.⁷³ Second, during the war, Moholy was, along with many others of his generation of Budapest intellectuals, a participant in the Galilei Kör [Galileo Circle], a kind of open intellectual forum at Budapest University. Not only was Valéria Dienes -- Bergson's student in Paris and the translator of his works into Hungarian -- a member of the Circle, but Bergson was a frequent topic of conversation in it.⁷⁴ Indeed historian István Hermann sees the influence of Bergson as having been second only to that of Nietzsche in early-20th-century Hungarian philosophy.⁷⁵

Furthermore, through his involvement with Lajos Kassák's Budapest "Activist" movement in 1918-19, Moholy-Nagy was exposed to Monism and the Anarcho-Pacifism of German Activism, a movement founded by Kurt Hiller.⁷⁶ Counting among its supporters the writer Kurt Pinthus, the editor Franz Pfemfert and the education reformer Gustav Wyneken, German Activism was part of the *Reformbewegung*, which was just then having a decisive effect on the Budapest avant-garde.⁷⁷ Júlia Szabó refers to Wolfgang Paulsen's 1934 dissertation in which he held that Activism was in general an outgrowth of Expressionism, and that its ideological roots lay in turn-of-the-century *Lebensphilosophie*, particularly in the thinking of Nietzsche and Bergson.⁷⁸ Whyte points out that Hiller's main source in his Activist program was his professor Georg Simmel's *Lebens-*

philosophie.⁷⁹ The links between Anarcho-Pacifism and Activism were strong. Whyte specifies the effect German and Russian Anarchists and Pacifists such as Gustav Landauer, Peter Kropotkin and Mikhail Bakunin had on it.⁸⁰ Szabó has also written of the direct influence that Monist scientists such as Ostwald and Mach exercised on Hungarian Activism.⁸¹ Moholy's "Light Visions" text -- supposedly a product of his convalescence in 1917 -- displays an awareness of Ostwaldian "Energeticist" Monism. If his notebook entry of 15 May 1919 is accurately dated and translated, then his references in it to "biological happiness," the projection of his own "vitality," and his project to "give life as a painter," constitute further evidence of a grounding in the Vitalist discourse.⁸² Like the Budapest Activists around Kassák and his journals *A Tett* [The deed] and *Ma* [Today], with whom Moholy was associated, the German Activists combined Leftist politics, Pacifism, *Lebensphilosophie*, Monism and Vitalism with an enthusiasm for Whitman and Expressionist aesthetics.⁸³ As we have seen, by 1922, "Dualism" was for Moholy, a *Schimpfwort*.

b. *Freideutsche Jugend*

Thus when Moholy landed in Berlin in mid-March of 1920, and encountered Quakers and members of the German Youth Movement such as Hans Harmsen, Reinhold Schairer, Friedrich Vorwerk and Lucia Schulz, he was receptive to or familiar with the utopian Activism, the *lebensreformisch* practices, and the biocentrism he encountered in their circles.⁸⁴ Hans Harmsen, a young medical student quartered at St. Joseph's Hospital in Berlin found Moholy-Nagy soon after his arrival in Berlin at the Hospital's porter's lodge, suffering from pneumonia. Harmsen nursed Moholy back to health. But not only was Harmsen a Good Samaritan; he was an aesthete, who -- along with his medical studies -- had attended Heinrich Wölfflin's last lectures in Munich. He was happy to receive artworks as gifts of thanks, and one of Moholy's largest and most impressive

portraits can now be identified as being of the young Harmsen. (Fig. 3-2) Later Harmsen, who became an internationally-respected specialist in public health, population, and family planning policy, built up a significant collection of works by artists such as Ferdinand Hodler, Käthe Kollwitz, Christian Rohlf's, and particularly Ernst Barlach.⁸⁵

In addition to his medical and artistic interests, Harmsen -- a former *Wandervogel* -- was active during 1920 in the *Bündische Jugend*, the movement which developed out of the *Freideutsche Jugend* in the late teens, and he was in the student parliament as well.⁸⁶ It is therefore safe to assume that it was Harmsen who put Moholy-Nagy in touch with the lawyer Reinhold Schairer (1887-1971), economic director of the *Deutsche Studentenschaft*, a student aid organization emergent from the *Jugendbewegung*.⁸⁷

In March of 1920 Schairer had recently come to Berlin from Copenhagen, where he had acted as director of the *Deutsche Sonderausschuss für Kriegsgefangenhilfe* in association with the German Red Cross.⁸⁸ Schairer continued his relief work in Berlin through the *Studentenschaft* by assisting with feeding and housing the students who had returned from the front. As he did not have the material means to help needy students himself, Schairer enlisted a group of English Quakers in Berlin to help set up a soup kitchen in association with the *Studentenschaft's* club on *Breitestrasse* in the city centre. Starting in May of 1920, 125 students were served daily there, and with the help of the municipal authorities, the daily capacity increased to 750.⁸⁹ Moholy must have eaten at this centre after its establishment; these were the "Quaker rations" Sibyl Moholy-Nagy refers to in her biography of László.⁹⁰ Such rations would have been crucial to Moholy during his first months in Berlin, before Lucia Schulz moved in with him and provided for their basic needs.⁹¹

The first official meeting of the Berlin Quaker Group was on 17 April 1920, soon after Moholy would have come into

contact with them. Had he attended their meetings, or during meals at the Quaker canteen, he would have encountered -- along with the German, English, American and Canadian Quakers -- a wide variety of non-conformists such as non-Quaker Pacifists, members of Christian sects, religious Socialists, revolutionaries, Communists, German Youth Movement adherents, and assorted occultists.⁹² Here Moholy would have had the opportunity to deepen his acquaintance with Pacifists and members of the *Lebensreform* movement which he had begun in Activist circles in Budapest.

As with Harmsen, Moholy's association with the Schairers went beyond their philanthropy towards him. Like Moholy, the Schairers were Leftist Pacifists associated with the Youth Movement. It was likely these common interests which encouraged Moholy to keep up his friendship with them at least until their move to Dresden in April 1921, where they became members of the circle of the Christian Socialist Paul Tillich, a key figure in the "Neuwerk" group which supported the founding of communes.⁹³

The Schairers entrusted Moholy to the care of their associate in the *Studentenschaft*, Friedrich Vorwerk, who helped Moholy find a place to stay in his own boarding house. Vorwerk had been an artist at the Worpswede artists' colony, and was at the time a radical Leftist *Freideutsche Jugend* activist.⁹⁴ The *Freideutsche Jugend* had grown out of the *Wandervogel* movement. Its left wing was inspired by the writings of Pacifist Anarchists such as Gustav Landauer, Count Tolstoy, and the Worpswede artist Heinrich Vogeler.⁹⁵ Both Vogeler and the *Freideutsche Jugend* were closely associated with German Activism. Vogeler was allied to Franz Pfemfert's Activist journal *Die Aktion*, and some members of the *Freideutsche Jugend* published *Der Aufbruch* during the war, an organ of German Activism which included in its circle Pacifists such as Hiller, Landauer, Wieland Herzfelde and the young Walter Benjamin.⁹⁶ Vorwerk is quoted in 1919 as having said that he

felt himself as belonging "menschlich der linksradikalsten Gruppe der Arbeiter."⁹⁷ Given this radicalism and his presence at Worpswede in 1919, there is little doubt that he took an active part in the short-lived Bremen Soviet Republic between 10 January and 4 February 1919.⁹⁸ He is noted in the literature on the Youth Movement for the speech he gave at Jena in April 1919 to a general meeting of all the factions, Left, Right and "third way," of the *Freideutsche Jugend*. Vorwerk's "religious Bolshevism"⁹⁹ was essentially an anarchist stance typical of Vogeler's circle, calling for the destruction of bourgeois society in order to prepare the way for the construction of a new one: "Communism will come, whether we want it or not; there remains nothing but one thing for us to do -- to go under with this world."¹⁰⁰

c. Lucia Schulz and Ernst Fuhrmann

It was through Vorwerk that Moholy met Lucia Schulz, the cultivated daughter of a Prague Jewish family. Schulz had been involved with the Youth Movement from an early age, so it was natural that after her move to Germany she should gravitate towards the same milieu. She had also been educated at the German University in Prague, where she remembers having studied science and philosophy with Ernst Mach and Richard Avenarius, whose biologicistic and Monistic *Empiriokritizismus* would affect both her and her future husband László's thinking.¹⁰¹ Schulz and Vorwerk probably met in Barkenhoff at Worpswede, Vogeler's Kropotkinian biocentric Anarchist commune, where Schulz had spent time in 1918 and 1919.¹⁰² The Barkenhoff commune was part of what Ulrich Linse has referred to as the second wave of the German communard movement, the one dominated by members of the *Freideutsche Jugend* from about 1918 to 1923.¹⁰³ A major inspiration on the anarchist commune movement was Landauer, who had translated Kropotkin's *Mutual Assistance in Nature* into German in 1908, and who was one of the leaders of the Bavarian Soviet of April 1919.¹⁰⁴ At Bar-

kenhoff Lucia was one of the "Pastors, sculptors, artists... and many women [who had] come to hear about Communism first hand," as Vogeler put it.¹⁰⁵ She participated in the commune's intellectual life through her contributions under the pseudonym "Ulrich Steffen" to *Neubau*, the Barkenhoff newsletter.¹⁰⁶

Besides Schulz and Vogeler, the only author who contributed to this first issue of *Neubau* was Ernst Fuhrmann, the self-described *Biosoph* and anarchist theorist of biocentrism.¹⁰⁷ As we have seen, Francé and Klages exercised strong influences on the ecological, nature-centric ideas of the *Freideutsche Jugend*, and on the German Youth Movement in general. Fuhrmann's contact with Barkenhoff represented a direct channel to contemporary biocentric thinking.¹⁰⁸ Both Vogeler and Fuhrmann were members of the Hamburg poet Richard Dehmel's circle, which may be how they came into contact, and Franz Jung implies that Fuhrmann spent time at Barkenhoff "immediately after the war," in the same circle Lucia Schulz was in at that time.¹⁰⁹ Vogeler's letter to Fuhrmann implies that he came to value Fuhrmann's *Biosophie* highly.¹¹⁰

Vogeler's close friend, the collector and Folkwang-Museum founder Karl Ernst Osthaus, hired Fuhrmann to head the anthropology department of his museum in 1919, and appointed him director of the Folkwang-Museum in 1920.¹¹¹ Fuhrmann founded the Auriga-Verlag there, hired Albert Renger-Patzsch as his photographer, and published a series of books in conjunction with the Folkwang-Museum's collections whose stated purpose was to promote "organische Richtungen für unsere gegenwärtige Kultur."¹¹² One of these publications, *Der Sinn im Gegenstand*, propounded a Monist, organicist aesthetic based on a study of ornament in ancient and "primitive" art. "Von dieser ... Basis aus mag untersucht werden," writes Fuhrmann in an evident reference to Ernst Haeckel's project for a Monist "religion," "wie eine Erneuerung der Kunst im Werke möglich wäre, und sie sich bereit machen kann, den Geist einer

kommenden Religion aufzunehmen."¹¹³

Evidence of Lucia Schulz's awareness of *Vitalmystik* is her article "Symbole" (published in *Freideutsche Jugend* in 1919), in which -- as we saw at the start of this Chapter -- she evinces a Monist *kosmovitalen Weltanschauung* that assumed the unity of body and soul, and of the body and soul in turn with the cosmos. Her ideas may reflect not only Vogeler's nature mysticism and Fuhrman's *Biosophie*, but also Klages' *Biozentrik*, so influential on the *Freideutsche Jugend*.¹¹⁴ In any case, it is probable that László Moholy-Nagy was in contact with Fuhrmann during the twenties, for he was the first to publish the work of Albert Renger-Patzsch within an avant-garde artistic context.¹¹⁵

In addition to accommodating what we could term "New Age," *Lebensreform* and biocentric communard ideas, Barkenhoff was a centre of the left-wing of the *Freideutsche Jugend*, and Schulz, like Vorwerk, was its active participant. Like some members of Barkenhoff, Schulz was involved in the fighting at the time of the suppression of the Bremen Soviet on 4 February 1919. Heinrich Vogeler recalls that Schulz and her "active Communist" friend Klara Möller, both *Barkenhofferinnen* at the time, assisted the wounded in the battles in which thirty people were killed.¹¹⁶ He also suggests that they were engaged in intelligence gathering and information transfers among the radical groups: "They were in the midst of the battle and they were able to shelter some threatened and many wounded comrades in the Bremen City Hall. They became able Party workers [tüchtige Parteiarbeiterinnen]."¹¹⁷ A further manifestation of her engagement with the fallen of Bremen was her publication -- again under the pseudonym Ulrich Steffen -- of an Expressionist-style poem calling for donations to help build a monument for the heroes in a 1919 brochure published for the purpose.¹¹⁸ Indeed, of the Moholy-Nagys Lucia was politically the braver and more committed of the two. While he never joined the Communist Party, László's political sympath-

ies are indicated by his friendships of the time with Communists and *Linksradikalen*. Moholy was close to Communist Party politics, but eschewed membership and commitment, content with being the sort of idealistic "fellow-traveller" that hard-line figures within the Party regarded with contempt.¹¹⁹

During the winter of 1919-20, after she left Barkenhoff, Schulz worked for the Hamburg bookstore and publishing house of the *Freideutsche Jugend* publisher Adolf Saal.¹²⁰ As publisher of *Freideutsche Jugend* since the Hamburg journal's inception soon after the movement was founded in December 1914, Saal had been at its core.¹²¹ We have seen that Schulz published in *Freideutsche Jugend*, and given her skills, it is likely that she did editorial work for the journal and publishing house in addition to work in the bookstore. Through her connections with Barkenhoff and the radical publishing sector, Lucia might also have come into contact with Kurt Schwitters. Schwitters shared the Hannover publisher Paul Steegemann with Vogeler and his wife Martha's lover Ludwig Bäumer. As a consequence Schwitters visited Worpswede repeatedly in 1919-20.¹²²

Thus, during her time at Barkenhoff Lucia would have, in addition to participating in communal agricultural activities, acquired an education in anarcho-Communist, *Lebensreform* and biocentric ideas. As this array was analogous to the scene at the Berlin Quaker centre in 1920,¹²³ at the time of their meeting László and Lucia would have had much in common: assimilated Jewish backgrounds, an awareness of biocentrism,¹²⁴ a commitment to Pacifism, to Expressionist avant-garde art and aesthetics, and to a radical left-wing, indeed Communist, politics; and first-hand experience of Soviet republics -- he in Budapest and she in Bremen. What is crucial for our argument here is that László, eating at the Quaker Centre, and living first with Vorwerk and then Schulz, was exposed to the core of the Youth Movement and *Lebensreform*. As Sibyl Moholy-Nagy phrased it, "[t]hrough [Lucia] and a circle of friends,

Moholy became part of the movement for psychobiological reform that spread through Germany after the First World War."¹²⁵ Sibyl pins this connection to the Mazdaznan cult, a view which Veit Loers accepts uncritically.¹²⁶ While Lucia and László were likely exposed to Mazdaznan, I know of no evidence apart from Sibyl's text that they were its -- much less the Theosophists' -- followers.¹²⁷ What they were involved in was the Leftist biocentric camp of the *Freideutsche Jugend*. By late 1920, they also came into touch with Berlin avant-garde circles, through which László befriended biocentric avant-gardists such as Hausmann and Behne.¹²⁸ In fact Moholy's oeuvre reverberates with biocentric ideas culled from *Lebensreform* more so than it does with Marxism or occultism. As he wrote in 1928,

[dass] der klassenkampf letzten endes nicht um das kapital ... sondern ... um das recht auf eine befriedigende beschäftigung, ... gesunde lebensführung und erlösende kräfte-auswirkung geht. utopie? nein, aber eine unermüdliche pionierarbeit. alles einsetzen für das ziel -- oberste pflicht für jene, die bereits zu der erkenntnis einer organischen lebensführung gekommen sind.... hier stösst das erzieherische problem ins politische.¹²⁹

Sibyl's reference to "psychobiological reform" alludes to László's origins in the biocentric wing of the *Freideutsche Jugend*, as she may have conflated the early *Freideutsche Jugend* contacts with Moholy's later interest in Raoul Francé's biocentrism, an interest she was well aware of.¹³⁰ As we have seen in Chapter Two, "psychobiology" was a term employed in connection with Francé's pre-World War One thinking.¹³¹ The clearest expressions of Moholy-Nagy's biocentrism were in his pedagogical writings, the thinking for which was forged within the German *Schulreformbewegung* and the communard movement of the early 1920s.

- d. "A tongue of fire to expound his happiness":
The Communes and Moholy-Nagy's Biocentric Pedagogy

The nineteenth century has not only opened our eyes to the aesthetic enjoyment of the microscopic world; it has shown us the beauty of the greater objects in nature.... All this progress in the aesthetic enjoyment of nature -- and, proportionately, in the scientific enjoyment of nature -- implies an equal advance in higher mental development and, consequently, in the direction of our monistic religion. (Haeckel 1899)¹³²

Wir verlassen die grauen Städte und betreten den Wald. Auch hier erschüttert und erhebt uns die Lebenseinheit des Gemeinschaftswillens, den die Natur in der beispielgebenden aufstrebenden Kraft der Baumsäulen zum Ausdruck bringt. -- Wir liegen am Strande des Meeres; eine unbegreifliche Sehnsucht erwacht in uns, eins zu sein mit den ewigen natürlichen Rhythmen, die Wandlung zur Einheit bedeuten. (Heinrich Vogeler)¹³³

From his biological being every man derives energies which he can develop into creative work. *Everyone is talented.* ... One has to live "right" to retain the alertness of these native abilities. But only art -- creation through the senses -- can develop these dormant, native faculties toward creative action. Art is the grindstone of the senses, the coordinating psycho-biological factor. The teacher who has come to a full realization of the organic oneness and the harmonious sense rhythm of life should have a tongue of fire to expound his happiness. (Moholy-Nagy 1928)¹³⁴

In Dresden Reinhold Schairer became a member of the circle of the Christian Socialist philosopher Paul Tillich, a key figure in the "Neuwerk" group, which established two agricultural communes with Quaker support. One of these, the "Bruderhof," was founded in the Rhön, the central German mountain range southeast of the city of Fulda.¹³⁵ This area subsequently became a favoured location for communes related to the German Youth Movement.

After their marriage in January 1921, Lucia and László spent their vacations at or near one of the communes in the Rhön which had their origins in the *Freideutsche Jugend*. The

Moholy practiced Vogeler's directives quoted above. As Lucia recalls,

Dass wir dann mehrfach unsere Ferien in der Rhön verbrachten, ergab sich fast von selbst. In einem der vielen Altenteil-Häuschen, mit Blick auf Wiesen und Berge wohnend, wo es uns gestattet war, ein bescheidendes Sommer-Dasein nach eigenen Wünschen zu führen, wurden wir bald mit zahlreichen anderen Menschen bekannt, die in diesem herben, damals noch wenig begangenen Landstrich den Rhythmus ihres Lebens gefunden hatten oder zu finden hofften.¹³⁶

Both Moholy-Nagy and his friend Ernő Kállai mention a vacation in the mountains as the locus for Moholy-Nagy's production of the *Ackerfelderbilder* during what must have been the summer of 1921, perhaps in August, after Lucia's job at Rowohlt Verlag ended.¹³⁷ Moholy-Nagy recalled "Spending a holiday in the country, where from the hilltops I could see hundreds of small strips of land, I painted pictures with coloured stripes in juxtaposition and called them 'acres.'" ¹³⁸ While clearly affected by the mechano-Dada style of Picabia and Schwitters, these works reflect László's fascination with the colour rhythms of the mountainous land depicted, as well as with the trains, tractors and power lines in it, an inscription of the "technological" on the "natural" -- a synthesis of the two -- untypical of postwar avant-garde art, but, as we shall see, characteristic of the postwar biocentric Constructivist perspective. (Figs. 3-3, 3-4)

As they did the following summer, the Moholy-Nagys may have stayed in the Rhön mountains on the *Ackerfelderbild* vacation, close to the Schule für Körperbildung Loheland, an Anthroposophical, holistically oriented womens' commune and gymnastics school founded by Hedwig von Rohden and Louise Langgaard near Fulda in 1919.¹³⁹ Lucia might have first met von Rohden and Langgaard on their visits to Barkenhoff,¹⁴⁰ or she may have heard of Loheland from the *Freideutsche Jugend* activist Paul Vogler, who became her friend while she was in Hamburg, and whose sister Elizabeth was a dancer.¹⁴¹ This

school spawned the *Loheländerin*, a liberated and ecologically aware female type famous in Weimar Germany.¹⁴² The Moholy-Nagys certainly spent their vacation of July 1922 at Loheland, for Weyhers, the village in which we know they roomed, is a mere three-kilometre walk southeast of the school. According to Lucia it is here that they developed their photogram practice and formulated the ideas published as "Produktion -- Reproduktion" in the September *De Stijl*.¹⁴³ Moholy-Nagy later wrote that he adapted the idea of the photogram from a *Loheländerin* who was making photograms using translucent plants, and his photograms of plants of around 1922 were probably inspired by this practice.¹⁴⁴

The organic-functionalist core idea of "Produktion-Reproduktion" -- emphasizing the development of the innate creativity of each individual -- was typical of *kunsterzieherisch* and *reformpädagogisch* ideas current at the time:¹⁴⁵

The human construct is the synthesis of all its functional apparatuses, i.e. man will be most perfect in his own time if the functional apparatuses of which he is composed -- his cells as well as the most sophisticated organs -- are conscious and trained to the limit of their capacity. Art effects such a training...¹⁴⁶

Andreas Haus points to the ultimate origin of the idea concerning the desirability of sensory education in the late 19th-century *Empiriokritizismus* of Ernst Mach and Richard Avenarius, who proposed individual subjectivity as the source of perception:

Dieses Postulat eines monistischen Ineinanderaufgehens von Empfindung und Welt führte zu einer Umkehrung des Erkenntnismodells: "Nicht die Körper erzeugen Empfindungen, sondern Empfindungskomplexe ... bilden die Körper..." [D]ie Entfremdung zwischen Ich und Umwelt [war] scheinbar aufgehoben.¹⁴⁷

Haus points out that these positivist Monist ideas were promulgated by Robert Müller-Freienfels after the war, whose book *Psychologie der Kunst* was published in 1922, the year the article was written.¹⁴⁸ He does not offer evidence that Lucia

or László would have seen the book, but he does point out the diffused transmission of Empiriocritical theories through the Russian and Hungarian avant-gardes, on whom Alexander Bogdanov -- a student of Avenarius in Zurich -- exercised an influence via his Proletkult movement, as well as through Moholy-Nagy's friends Hausmann, Rudolf Blümner and Adolf Behne, and their interest in the psychovitalist perceptual theories of Ernst Marcus.¹⁴⁹

Another source for the Moholy-Nagys' biocentric pedagogy is the *kunsterzieherisch* concept of the *Schulreformbewegung* as it was dispersed through the Youth Movement, its communes and its schools.¹⁵⁰ Lucia Schulz was likely aware of the holistic pedagogy of the *Schulreformbewegung* through experience with her Hamburg employer Adolf Saal, who published basic documents of this movement, and whose bookshop, where she worked, would have carried its other publications.¹⁵¹ Lucia was also exposed to the Gustav Wyneken-inspired pedagogical ideas of Heinrich Vogeler during her stay at Barkenhof. Vogeler put his holistic *kunsterzieherisch* pedagogical ideas into practice at the Barkenhoff School.¹⁵² It is conceivable that László met Vogeler or heard him speak, for the *Bund Entschiedener Schulreformer* (BES) of the *Entschiedener Jugend* (an outgrowth of the *Freideutsche Jugend* founded in September 1919) held a series of lectures and conferences on the subject of pedagogical reform during the twenties.¹⁵³ As a recent *Barkenhofferin*, Lucia might have wished to meet Vogeler when he came to Berlin, and had she done so it is conceivable that she would have taken her new lover László. Thus László might have met or heard Vogeler around 11-19 June 1920, when Vogeler took part as a delegate at the *Freie Reichsschulkonferenz* of the BES in Berlin, or when in October 1920 there was a meeting in Berlin of the BES at which Vogeler gave a lecture.¹⁵⁴ As well as from Lucia, László might have heard of the events from Harmsen -- also a member of the BES -- or from Kállai, a teacher interested in the new pedagogy.¹⁵⁵ Given that Klages' and

Benjamin's friend Gustav Wyneken -- the first theorist of "youth culture" -- taught at the Barkenhoff School before it was closed in 1921, it is likely that Lucia was exposed to his John Dewey-inspired *Arbeitschule* methods as well.¹⁵⁶

The Moholy-Nagys' pedagogy was affected by the ideas of the *Freideutsche Jugend* pedagogical reformer Marie Buchhold and the music teacher Heinrich Jacoby. Buchhold was closely associated with Paul Vogler's sister, the *Freideutsche Jugend* pedagogue and Wyneken-disciple Elisabeth Vogler. Elisabeth had been at Loheland in 1919-20, and the Moholy-Nagys had met her in the Rhön by 1922, perhaps at her and Buchhold's home.¹⁵⁷ In the fall of 1923, again with financial help from Quakers, Buchhold and Vogler founded a womens' commune and school at Schwarzerden, 10.5 km east of Loheland.¹⁵⁸ László and Lucia might have taken a rest in the Rhön mountains after the end of the Bauhaus-Woche on 19 August 1923 while Buchhold and Vogler were working on their new commune. The Moholys certainly vacationed at Neuwart, a hilltop site two kilometres west of Schwarzerden and eight kilometres southeast of Loheland during the summers of 1924 and 1926.¹⁵⁹ Lucia would have participated in the *Ferienkurs* of Schwarzerden, a veritable smorgasbord of *Lebensreform* practices. There were lectures, workshops and demonstrations in gymnastics, massage, holistic health, breathing, pedagogy, music, literature and psychology, and László might have joined her on occasion, as Elisabeth remembers.¹⁶⁰ That László enjoyed these stays at Schwarzerden is indicated by his 26 July 1924 letter to the Van Doesburgs, which he opened with "wir sind wieder in der rhön bei unseren wirklich-schönen bergen ... gelandet, da wir kein geld hatten an die see zu fahren.... es regnet fast dauernd, aber fern von allem betrieb fühlen wur uns ganz ausgezeichnet."¹⁶¹ It is affirmed by Lucia, who remembered that

Aber nicht nur auf dem Wege menschlich-pädagogischen Austausches, auch zur Anregung und Erneuerung eigener Denk- und Arbeitsprozesse hat in die Klima und Landschaft der Rhön gebotene Lebensqualität wesent-

lich beigetragen. Sowohl Moholy-Nagy als auch ich haben während unserer Aufenthalte in der Rhön gute und fruchtbare Denkarbeit geleistet, bis zu dem Tag, da äussere Umstände sich störend in den Weg stellten....¹⁶²

László's commitment to the womens' commune is indicated by his colour scheme for the Gymnastics Hall, its most important structure.¹⁶³ In fact, he is the only prominent artist mentioned by Elisabeth Vogler in connection with the commune.

At Loheland in the early 20s, and at Schwarzerden in 1924 and 1926, Moholy was exposed to Buchhold's biocentric Feminist pedagogy. This pedagogy indicates that she is an unrecognized pioneer of eco-Feminism. Evidently affected by J.J. Bachofen's hypothesis of *Mutterrecht* -- the matriarchal structure of ancient society -- which circulated in the Stefan George circle of which she was a member, as well as by Klages' environmentalism, Buchhold's diary of 1924 contains passages such as: "Unter Körperlehre ... ist gemeint die Erkenntnis des menschlichen Organismus innerhalb des Organismus der Welt" and "Die Frau ... braucht eine von sich aus gefundene frauenhafte ... Naturlehre als Weltanschauung."¹⁶⁴ The biocentric aspect of Buchhold's thinking is echoed in László's own pedagogical writings of the time (which Lucia helped him formulate), for example: "Der Mensch ist der Mikrokosmos. Über ihm und in ihm walten universelle Gesetze. Sein ganzes Wesen und Schaffen ist ein einziger Versuch, diese Gesetze auszudrücken, ihnen ein Form zu verleihen."¹⁶⁵ In his 1928 pedagogical treatise *Von Material zu Architektur*, László acknowledged his debt to the *Reformschulbewegung* and the German Youth Movement, to Wyneken and Vogeler, as well as, indirectly, to the *Freideutsche Jugend* and its communes.¹⁶⁶

A decisive source for László's pedagogy was the work of the biocentric music teacher Heinrich Jacoby, whose thoughts on "schöpferische Musikerziehung" he planned to publish in the *Bauhausbücher* series, and whose article he planned to publish in *i10* in 1927. Though neither of these projects were real-

ized, Moholy praised Jacoby's project as "eine der wichtigsten geistigen leistungen unserer Zeit" and as belonging "to the most valuable sources from which our present and future pedagogy can draw."¹⁶⁷ Moholy might have learned of Jacoby by attending his lecture at the Berlin *Kunsttag* of the BES on 5 May 1921, or he might have learned of him at Loheland, whose founders von Rohden and Langgaard were well-versed in Jacoby's employer Émile-Jacques Dalcroze's method of rhythmic dance education.¹⁶⁸ In any case, as Lucia pointed out, and as László himself acknowledged, it is from Jacoby that László adapted the idea that "everyone is talented," and that the job of the teacher is to draw out this talent in each student.¹⁶⁹

This makes it clear not only that the basis for Moholy's pedagogy was biocentrism, but that it was -- like Haeckel's and Francé's -- a normative biocentrism. At the start of this section I included a passage from *The New Vision*, the American edition of *Von Material zu Architektur*, which Sibyl Moholy-Nagy chose to quote in her biography of László. We can now recognize this passage as an amalgam of *Empiriokritizismus*, Jacoby's pedagogy, concepts of *Kunsterziehung* emerging from the *Schulreformbewegung*, Francé's biologicistic and normative *Objektive Philosophie*, Vitalism, and Monism.¹⁷⁰ László begins *Von Material zu Architektur* with a statement of pure biogism: "jede handlung und jeder ausdruck des menschen setzt sich aus verschiedenen komponenten zusammen, die im biologischen aufbau begründet sind."¹⁷¹ An equally clear statement of László's "biological" approach to education is in *The New Vision*, into which he inserted a section entitled "Biological needs," probably because he felt he had to explain these terms to an American readership:

In this book the word "biological" stands generally for laws of life which guarantee an organic development. If the meaning of "biological" were a conscious possession, it would prevent many people from activities of damaging influence.... The oncoming generation has to create a culture which ... strengthens the genuine biological functions.¹⁷²

Moholy-Nagy's biocentric pedagogy was a project he continued to develop after his move to the United States. Indeed, in America he had the opportunity to correspond with John Dewey, whose pragmatist concept of "learning by doing" inspired the same *Schulreformbewegung* Moholy had been inspired by.¹⁷³

3. Biozentrik at the Gropius Bauhaus

The Bauhaus strives to bring together all creative effort into one whole, to reunify all the disciplines of practical art.... (Gropius 1919)¹⁷⁴

Welt/Materie - Geist/Stoff - Unstoffliches Stoffliches/Sein - Unseiend Seiendes/Einheit - ewig verkettete zwiespältige Zweiheit, Erlöst im Formwerk des formenden Menschen zu einfältiger Einheit. (Itten 1920)¹⁷⁵

Our times lack a great unifying idea or religion. The artists are striving to create one, and the way to it appears to lead via absolute individual subjectivity. Like the mystics today's artists hope to pass through total self-absorption to oneness with God and the universe. All is part of nature, part of the fabric of the universe ... everything functions together to express the essence of the universe. (Schlemmer 1918)¹⁷⁶

The aim of our theoretical work is always, in one form or another, the organisation of differences into unity, the combination of organs into an organism.... Like a man, a picture has skeleton, muscles, and skin. We may speak of a specific pictorial anatomy. (Klee 1922)¹⁷⁷

The artist of today ... is a creature on the earth and a creature within the whole.... Accordingly a sense of totality has gradually entered into the artist's conception of the natural object, whether this object be plant, animal, or man. (Klee 1923)¹⁷⁸

Es scheint mir, dass eine ... Einstellung zur 'Natur' und zum 'Mensch', als Teil der 'Natur', auch in den positiven Wissenschaften heute an der Zeit wäre.... Auf diesem Wege kommt die Kunst und die Wissenschaft von der einseitig entwickelten Spezialisierung ab, die eine fatale Zerstreung mit sich brin-

gen musste.... Der verlorene Zusammenhang des Inneren in allen Welten... wird sich in ein Zusammenschmelzen verwandeln -- äussere Unterschiede, innere Einheit. (Kandinsky 1925)¹⁷⁹

A specialized education becomes meaningful only if a man of integration is developed along the lines of his biological functions, so he will achieve a natural balance of his intellectual and emotional power The future needs the whole man. (Moholy-Nagy 1929)¹⁸⁰

Yes, I agree that essentially or eventually everything is one unity. (Wassily Kandinsky)¹⁸¹

Le changement fondamental de notre conception du monde, transmutation profonde d'ou résulte la grande révolution formelle des arts, réside dans l'absolue négation du matérialisme et du spiritualisme pur. Le résultat de ce changement est l'avènement de l'idée synthétique dans laquelle esprit et matière forment un seul processus. En art l'esprit et la source, la matière ... est l'expression. (Kandinsky 1936)¹⁸²

It is not necessary to rewrite the history of the Bauhaus in light of the foregoing discussion. Its reexamination however, is required given this thesis' premise of the importance of biocentrism. The standard narrative of the institution (early romantic/expressionist/occult "Itten" phase; *sachlich* "Moholy-Nagy" period from 1923 to 1928; functionalist/Marxist era under Meyer) is accurate as far as it goes, but if it is understood simplistically it can also be misleading.¹⁸³ As early as 1968 Joseph Rykwert wrote of "The Dark Side of the Bauhaus," that is its "esoteric" component being more integral to Gropius' thinking than hitherto believed. As Franciscono observed in 1971:

If ... it is ... convenient to speak of the "Itten years" and the "Moholy-Nagy ... years" of the Weimar Bauhaus as a shorthand for the differences of philosophy in the two periods, we should not make the mistake of dividing them into neatly separated phases.... It is not merely that the Bauhaus was in continuous process of change, but that from the beginning it was a tangled skein of various and even conflicting motives and tendencies, nowhere more in

evidence ... than in ... Gropius himself.¹⁸⁴

Scholarship since Franciscono has proven him right. Sara Lynn Henry, Schall, Findeli and others have shown that the Bauhaus was a multifaceted institution, one which was more than the bastion of scientistic, dualistic, technocentric, *sachlich* positivism it is popularly conceived to be. As Henry noted in 1976, it was one to which neo-Romantic Monistic, organic and nature-centric -- as well as esoteric -- attitudes were innate, and not merely during the first three years. Central components of biocentrism such as *Lebensphilosophie*, Organicism, Holism, Monism, and Neo-Vitalism were threads which extended throughout all of the Bauhaus periods.¹⁸⁵ The Monist/Holist/Organicist *topos* of the "unity" and/or "integration" of the arts, of the cosmos, of humanity and nature, of humans with their surroundings, of what we would since fractal theory term the "self-similarity" of microcosm and macrocosm, was a leitmotif of Bauhaus thinking, just as it was of the first Romanticism.¹⁸⁶ Also, prominent *Bauhäusler* such as Klee and Kandinsky were Vitalist and Monist Organicists, who saw the world and its components as nested hierarchies of organisms animated by an ineffable life-force. While the early 19th-century Romantic heritage is by and large acknowledged in the historical literature on the Bauhaus, a crucial dimension missing from the standard narrative -- one which demonstrates both the temporal continuities and discontinuities in it -- is the way in which *Biozentrik* was manifest among *Bauhäusler*.¹⁸⁷

Moholy-Nagy's biocentrism was part of a discourse on nature, "life" and "unity" carried on within the Bauhaus, which reflected prevailing currents of thought in Weimar Germany: the Romantic nature-centrism of the Youth Movement, i.e. the *Reformbewegung*; Haeckelian/Ostwaldian Monism; Goethean Organicism; *Vitalmystik*, Holism; *Empiriokritizismus*, Gestalt psychology, Klages' and Prinzhorn's *Biozentrik*; von Uexküll's *biologische Weltauffassung*, and Francé's *Objektive Erkenntnislehre*, which legitimized the International Construc-

tivists' interest in nature. Moholy-Nagy's replacement of Itten did not merely signal the displacement of a "romantic Expressionism" by its Constructivist Other at the Bauhaus. Rather, this shift towards the "sachlich" and away from the "occult" mirrored the shift *within* the discourse of *Biozentrik* itself described in Chapter Two; from a Romantically based pre-war neo-Vitalist Monism towards its more functionalist variant as propounded by Francé.¹⁸⁸ The objection -- implicit or otherwise -- of other nature-centric *Bauhäusler* such as Kállai, Klee, Kandinsky, and Schlemmer, to Moholy's and later Hannes Meyer's project and approach reflects the uneasy cohabitation of a *retardé* pre-war Monism with Francé's and von Uexküll's post-war *sachlich* revision of it. The neo-Romantic *kosmisches Einheitsgefühl* of *Vitalmystik* had in some cases evolved by the late 20s into its Klages- and Prinzhorn-inspired *doppelgänger*, the notion of the "demonic" in nature. As Kállai wrote: "Die Bioromantik scheut es nicht, mit offenen Augen in diese Abgründe unserer Kreatürlichkeit zu blicken. Sie wagt es, unsere Zivilisation mit Gleichmut, ja mit Pessimismus zu betrachten. Sie wagt es ... sich einer bösen Lust am Chaos, am gefährlich Unterirdischen hinzugeben."¹⁸⁹ Those like Kállai, Klee and Hausmann who espoused this complex, even pessimistic view of nature were annoyed by what they saw as the naive optimism of Francé's biologism. As seen in Chapter Two, history proved the pessimists right.

a. Gropius

The pre-history of the Weimar Bauhaus indicates how firmly rooted Gropius' re-founded institution was in *fin-de-siècle* biocentrism. Henry van de Velde, the Belgian director of the Bauhaus' predecessor, the Weimar Kunstgewerbeschule (1908-1914), was along with August Endell and Hermann Obrist, a leading figure of nature-centric European *Jugendstil*, what Robert Schmutzler has referred to as "Biological Romanticism."¹⁹⁰ Furthermore it was the close friends Van de Velde,

Obrist and Endell, who were most affected by Haeckel's Monist program of the normative aestheticization of scientifically derived undersea and microscopic imagery.¹⁹¹ In nominating Obrist and Endell as candidates to replace him when he had to resign in July 1915, van de Velde seems to have meant for the school to continue in an aesthetically Monist, Haeckelian direction. Van de Velde's inclusion of the young Gropius on this slate was an indication, furthermore, of what he might have perceived to be Gropius' own organicism.¹⁹² We have also seen how Bauhaus masters such as Herbert Bayer, Paul Klee, Wassily Kandinsky, Oscar Schlemmer, Moholy-Nagy and Johannes Itten -- as well as Bauhaus students -- had links to or roots in the *Jugendbewegung*, in which the question of nature was so central.¹⁹³ While Gropius had been neither a *Jugendbewegte*, nor a member of the *Monistenbund*, his participation in the Deutsche Werkbund (founded in 1907) and his association with van de Velde and Karl Ernst Osthaus, brought him into close contact with pre-War biocentric aesthetic thought, whose organicist vocabulary he adopted. Thus, in a prewar lecture given for Osthaus he stated that "Modern living [requires] new building organisms expressing the life forms of our times," while in a letter to Fritz Mackensen concerning his plans for the Bauhaus-to-be, he spoke of an "autonomous teaching organism."¹⁹⁴ Furthermore, his participation, with van de Velde, Taut, Obrist, Endell, Osthaus and others in the pre-war German Werkbund; and with Taut and Behne in the leadership of the Arbeitsrat für Kunst, the *Gläserne Kette*, and the Novembergruppe (in effect, the German *Reformbewegung* in its artistic-political cast), brought him into close contact with aspects of biocentrism in their various manifestations, with neo-romantic Haeckelian Monism as well as with its von Uexküllian biologicistic reform.¹⁹⁵ Though he was not *vitalmystisch* as Taut was at the time, the Monist organicism of the Glass Chain clearly had an effect on Gropius. In early 1919, at the time of his appointment to the Bauhaus, he wrote, "Beweglichkeit,

dem Akademischen werfe ich den Fehdehandschuh hin, kein mechanischer Aufbau, sondern lebendiger, organischer."¹⁹⁶ Gropius' "Programm des Staatlichen Bauhauses" of later that same year - - in addition to the Nietzschean overtones observed by Schall - - is both Monist and organicist: "The Bauhaus strives to bring together all creative effort into one whole, to reunify all the disciplines of practical art..." while aiming for "organic forms developed from manual skills."¹⁹⁷

Hence it is not surprising that Gropius should correspond with Gustav Wyneken and that he should invite him and the *Lebensphilosoph* Hermann Keyserling to lecture at the Bauhaus early in 1920, even if he did veto a lecture by Heinrich Vogeler for political reasons.¹⁹⁸ Indeed, no lesser figures of biocentrism than Driesch and Ostwald were recruited as members of the Governing Board of the "Circle of Friends of the Bauhaus," formed in 1924 to support the school in the face of mounting attacks in the Thuringian parliament, and both lectured there as well.¹⁹⁹

While Klages did not become an active Bauhaus supporter, two of his disciples did: The art historian Josef Strzygowski was another member of the original Board of the Friends of the Bauhaus,²⁰⁰ and in 1932, during the final struggle to save the Dessau Bauhaus, Hans Prinzhorn - - a friend of Mies van der Rohe's since 1910-11 - - helped Ludwig Grote organize to save the school.²⁰¹ Klages' ideas and Prinzhorn's adaptation of them affected the school throughout its existence. Prinzhorn's analysis of outsider art impressed the future Bauhaus faculty as early as 1920, when Schlemmer and Klee first heard the psychiatrist lecture about the art of mentally ill people. In the months following the publication of Prinzhorn's *Bildnerei der Geisteskranken* in June 1922, the book "kursierte ... im Bauhaus" according to Lothar Schreyer.²⁰² During 1923 Prinzhorn would have been aware of the dance experiments being carried out by Schreyer and Schlemmer at the Bauhaus through his then lover Mary Wigman, with whom he lived in Dresden.²⁰³

In 1929 Prinzhorn lectured at the Bauhaus on his Monist "Body-Soul-Unity" psychology and his explicitly biocentric "psychology of the personality," while Kállai praised his thinking as editor of *bauhaus*, and Prinzhorn lectured again on 3 February 1932, on "Trieb und Wille im künstlerischen Gestaltungsvorgang."²⁰⁴ Schlemmer taught Klages' psychological theories in his course on "Man" in 1928-29, while the two Gestalt psychologists, Felix Krüger and his follower, Karlfried Count von Dürckheim lectured in 1930-31, the latter discussing Klages' *Der Geist als Widersacher der Seele*, according to Howard Dearstyne's notes.²⁰⁵ Strzygowski, Driesch and Ostwald continued to be members of the Circle of Friends of the Bauhaus at least until 1929.²⁰⁶

Raoul Francé and his wife, the writer Annie Harrar, who were spending their winters in Weimar at the time, tended towards the neo-conservative elite social circle of the town, headed by Elisabeth Förster-Nietzsche, whom Gropius is known to have disliked but with whom he strove to maintain cordial relations.²⁰⁷ Indeed beyond an illustration of Weimar's vitality there is a critical undertone to Francé's words in the introduction to *Plasmatik*, written in Weimar in 1923. Taking the reader on an imaginary walk through the town he remarks, "Aber neben dem stillen Weimar gibt es eines voll lautem Vorwärtsdrängen, voll von 'Bauhausgedanken'...."²⁰⁸ Their ambivalence is indicated by the fact that in the midst of strong anti-Bauhaus feelings in 1923, the Francés not only visited the Bauhausausstellung but they spent an evening with the busy Gropius, who patiently explained to them the Bauhaus and its pedagogical principles.²⁰⁹ It is possible that -- as with Förster-Nietzsche -- Gropius was looking for support from the Francés and that he would have tried to recruit them to the Circle of Friends of the Bauhaus the following year, but whether they would have accepted such an invitation or not (for they were not impressed with the exhibition²¹⁰), the Francés had left Germany for Austria by 1924, and did not

become the Bauhaus' active supporters. Nevertheless, Francé's effect on pedagogy and design practice was stronger than any other biocentric thinker's at the school apart perhaps from Klages. As we shall see, his ideas, particularly on *Biotechnik*, were important for the pedagogy of Moholy-Nagy, Hannes Meyer and Mies van der Rohe, as well for the architecture theorist Siegfried Ebeling while he was a Bauhaus student during the mid-20s.

b. Itten

It is in this light that we must consider Gropius' decision to take Behne's advice in deciding on Moholy as Itten's replacement.²¹¹ It is also in this light that we should see Gropius' hiring of a holist and organicist Monist such as Johannes Itten to teach the crucial introductory course, even if Itten's ideology was suffused with an occult sensibility. Itten is usually seen as simply an occultist, opposed to Gropius' *sachlich* tendencies. But *Das frühe Bauhaus und Johannes Itten*, a reexamination of Itten's oeuvre in the context of the early Bauhaus, has shown otherwise. It is as much an oversimplification to label Itten as having been merely an occultist as it is to do so with Steiner, Taut, Maeterlinck, Kandinsky, or others whose "*kosmovitalen Einsfühlung*," whose "*Vitalmystik*," straddles the boundary between the epistemological fields of *Biozentrik* and the Esoteric.²¹²

Peter Hahn has concluded that Itten's impulse was "ganzheitlich," i.e. holistic.²¹³ Hans Christoph von Tavel agrees: "In all seinen Tätigkeiten am Bauhaus liess sich Itten, reagierend auf die Erkenntnis der Widersprüchlichkeiten in der Realität, vom Ideal einer umfassenden, harmonischen Ganzheit im Einklang mit dem ganzheitlichen Wirken des Kosmos. Itten sucht für sich und fördert von seinen Schülern im Tun, im Denken und im Fühlen den möglichst reinen Ausdruck für diese Ganzheit."²¹⁴ Identifying Goethe as a source for this *vitalmystisch* holism, and referring to Itten's text quoted at

the start of this section, Von Tavel identifies the artist's essential Monism: "Itten suchte seit seiner Stuttgarter Zeit nach der Überwindung des Dualismus und nach Erlösung von diesem durch eine übergeordnete Einheit." Von Tavel interprets Itten's growing involvement with the Mazdaznan discipline during his Bauhaus period as symptomatic of his Monism, as this "boten ihm in gewissen Sinne einen Schlüssel zur Lösung des Grundproblems vom Zwiespalt zwischen Materie und Geist," an issue which also concerned Schlemmer.²¹⁵

Like Moholy-Nagy's, Itten's pedagogy has been shown to have been organicist, and like Moholy's it was informed by the ideas of John Dewey and Jacoby among others.²¹⁶ Itten's concept of artistic formation on the physical, *seelisch* and *geistig* levels, as articulated in his 1921 publication *Analy-sen alter Meister*, is an amalgam of Anthroposophy, Klages' *Ausdruckskunde* and Francé's theory of formation in nature propounded in his book *Die Pflanze als Erfinder*: "Everything vital reveals itself to man through movement. Everything vital reveals itself in forms. Thus all form is movement and all movement is manifest in form. Forms are receptacles of movement and movements the essence of form."²¹⁷ Itten's art reflects his Monist and organicist holism. One of his decorative plaster panel relief sculptures of 1920 is entitled *Organisch*. Concerning his spiral *Tower of Fire* model, which he realized with the cooperation of his students, Itten wrote on 15 December 1920, "Bauhaus bauen, aufbauen, zusammenfügen -- verschiedene Kräfte ... zum einheitlichen Organismus zusammenbauen."²¹⁸ Von Tavel accounts for Itten's stylistic eclecticism with this holist Monism, which he sees as having included "einen sowohl naturwissenschaftlich wie romantisch ausgerichteten Naturalismus."²¹⁹ For all these reasons von Tavel argues against labeling Itten and his period at the Bauhaus "expressionist" though he stops short of suggesting that they would more accurately be referred to as holist, Monist or organicist.²²⁰ Granted, relations between the *haut-*

bourgeois Gropius and the charismatic counterculture-figure Itten deteriorated over time. Still, given his friendship with the biocentric Anthroposophist Taut, and his attendance at a Mazdaznan Congress with Itten in the summer of 1921, Gropius may not have been as alienated from the content of Itten's teaching as he was from the form it took.²²¹

c. Schlemmer

It was not only Itten and Moholy-Nagy who embodied biocentric views at the Bauhaus. Even after his arrival at the Bauhaus to replace Itten in April of 1923, Moholy-Nagy would have been able to share such views with his colleagues Oskar Schlemmer, Paul Klee and Wassily Kandinsky. Not only had Schlemmer been part of the Youth Movement, his wife Helena Tutein (Tut) had studied dance at Dresden-Hellerau under Dalcroze.²²² His wartime diaries give evidence of an awareness of Haeckel's ideological and aesthetic programs, as well as of a deep Monism:

Why does one need nature? Because nature offers forms which the imagination cannot create, or because the imagination is enriched, stimulated by the forms perceived in nature.²²³ [L]et us ... depict things which are only obscurely sensed ... The boundaries of awareness will be expanded, and our progress towards solution of the great riddle [grosse Rätsel] hastened. Everything should merge into one great current.²²⁴ Through nature ... this handclasp with the universe ... nature's vitality flows into the work of art.²²⁵

By 1920, at home in Stuttgart, Schlemmer was not only becoming involved -- like his fellow Adolf-Hoelzel-pupil Itten -- with Mazdaznan,²²⁶ he was reading the popular biocentric and *lebensphilosophisch* writers of the time: Oswald Spengler, Hermann Keyserling, Walt Whitman and the Norwegian novelist Knut Hamsun. In a letter to Tut Schlemmer, he notes, "Hamsun ... would strengthen your existential sense of merging with the universe; you find the same thing in Walt Whitman"²²⁷ A couple of months later he was fascinated with a

lecture given by Prinzhorn, soon to become the disciple of Klages. Schlemmer was so taken with the writings of the popular *Lebensphilosoph* Keyserling that he considered going to Darmstadt to study at Keyserling's newly established "Schule der Weisheit."²²⁸

At the Bauhaus Schlemmer espoused a Monist stage theory, "that the human body forms a vital continuum with the space surrounding it. By uniting the planimetric and stereometric aspects of external space with the internal metaphysics of the body, he hoped to arrive at a 'mystical synthesis'."²²⁹

d. Klee and Kandinsky

For the most part, the literature treats Paul Klee and Wassily Kandinsky analogously to Schlemmer and Itten. Klee's fascination with nature and science has been investigated in great detail and need not be rehearsed here.²³⁰ As Sarah Henry put it, "nature and man's relation to nature" were Klee's "central obsession."²³¹ While agreeing that "the most important theme of Klee's art was nature," Richard Verdi also states that "Klee's understanding of the living world was unequalled by that of any other painter of his time."²³²

It is usually assumed that Kandinsky's interests lay more in the realm of the "supernatural" than in the "natural," or rather more in the "metaphysical" or "spiritual," than the "physical" or the "material." Nevertheless -- as we can see from the quotations above -- like Rudolf Steiner, he was interested in nature and modern science, particularly physics and biology,²³³ and the balance between the "material" and "spiritual," indeed their Monist "unity." Henry has written of "the great interest at the Bauhaus in the sciences and technology," as well as in scientific imaging, especially microscopy.²³⁴ As Carola Giedion-Welcker phrased it, Klee "was interested in everything created, in the organic growth of nature, as well as the mechanical products of man."²³⁵ Given the organic ideas circulating around Vladimir Tatlin, Vladimir

Khlebnikov, Mikhail Matiushin and Pavel Filonov in Russia, there is little doubt that Kandinsky would have become aware of them in Russia during the war and after the Revolution.²³⁶ In any case, Clark Poling has shown the extent to which Kandinsky adapted his own teaching to the Bauhaus' program of a synthesis of science, technology and art after his arrival there in 1921.²³⁷ Zweite explains this shift from his earlier, predominantly Occultist, position as follows:

Now that it was no longer quite enough to cite the "great spiritual" ... Kandinsky looked for another authoritative sanction that would permit him to rise above sordid materiality.... In the light of his basic (antimaterialist and antipositivist) convictions, one of his trains of thought might surprise us, even though it was sanctioned by tradition: ultimately the references to science and engineering that run through *Point and Line to Plane* serve only to underline the idea of the morphological identity of art and nature.²³⁸

Zweite sees this adaptation as an "idealist's obeisance to the Bauhaus ideology, and to its program of putting art to practical use." We can now see, however, that Kandinsky -- commensurate with the *Zeitgeist* -- engaged in an adaptation of the biocentric elements already present in his pre-war thinking. While deemphasizing the "spiritual," Kandinsky highlighted the "scientific." A marker of this adaptation was his increasing emphasis on the naturamorphic analogy.

In 1932 Kandinsky remembered about 1912 that "my immediate plans for the next volume of *Blaue Reiter* were to put art and science next to one another: origins, realization through various work processes, purpose."²³⁹ In 1915 Oskar Schlemmer reported in his diary that "Kandinsky: mentions the appeal of every unconscious arrangement of lines, reminiscent of microscopic enlargements, similar to Pankok's sensational discoveries."²⁴⁰ But by the mid-20s he would go on to a clear statement of the naturamorphic analogy in his pedagogical treatise *Punkt und Linie zu Fläche*.²⁴¹ Through his juxtaposition of scientific photographs and his own abstract

sketches, Kandinsky was one of the first to invoke the scientific image analogy. As in nature, "both [organic and linear/geometric] forms of construction occur in abstract painting."²⁴² At the Bauhaus "Klee possessed a collection of natural objects that he used in studying nature, appearance and structure of the most diverse organisms."²⁴³ As we know from *Point and Line to Plane*, Kandinsky illustrated his lectures with scientific images such as microscopic cross sections of organic tissue, telescopic images, crystalline structures, x-ray images, and close-up nature photographs.²⁴⁴ He also assembled a collection of clippings and printed images. As Vivian Barnett notes, this collection consisted of "subjects generally characterized as technology and nature. In his Bauhaus teaching notes for the second or summer semester of 1931, Kandinsky compared art, science, technology and nature...." The clippings include images by well-known close-up nature photographers such as Ernst Fuhrmann, Karl Blossfeldt and Albert Leon.²⁴⁵ Just as Haeckel held that "in our microscopic knowledge of the little and in our telescopic investigation of the great we have attained an invaluable insight that seemed inconceivable a hundred years ago,"²⁴⁶ Kandinsky wrote that "only by a process of microscopic analysis will the science of art lead to an all-embracing synthesis, which will ultimately extend far beyond the boundaries of art, into the realm of 'union' of the 'human' and the 'divine.'" ²⁴⁷ In 1936, in a Haeckelian vein, he intoned:

The experience of the "hidden soul" in all things, seen either by the unaided eye or through microscopes or binoculars, is what I call the "internal eye." This eye penetrates the hard shell, the external "form," goes deep into the object and lets us feel with all our senses its internal "pulse."²⁴⁸

But Kandinsky did not only employ scientific imagery in his teaching. Henry points out Kandinsky's use of the Neo-Vitalist crystallographer Otto Lehmann's illustrations as sources for his own imagery, while Barnett discusses how Kandinsky's copy

of the encyclopedia *Die Kultur der Gegenwart* was the source of the biological imagery in his paintings of the 1930s.²⁴⁹

The shift in emphasis to the scientific image at the Bauhaus was not accompanied by an evacuation of metaphysical content from Kandinsky's *Weltanschauung*. Kandinsky's *kosmischen Einsföhlung* blended comfortably with that of contemporary Bioromantic artists such as Klee and Arp.²⁵⁰ That the combination of Kandinsky's "scientific" and "mystic" interests is not unusual for the time, is indicated by the other examples of such a synthesis mentioned above. Rudolf Steiner - so highly regarded by Kandinsky - was the editor of the official edition of Goethe's scientific writings, a supporter of Haeckel and his theories, and the author of a book on Haeckel.²⁵¹ The Belgian poet Maurice Maeterlinck and the German palaeontologist Edgar Dacqué, along with Steiner, two of Kandinsky's favoured authors, were - like Kandinsky - Neo-Vitalists who in synthesizing the scientific and the "spiritual" tended towards the latter.²⁵² Biocentrism provides a framework within which we can more fully understand such hybrids and Kandinsky's interest in them.

Klee and Kandinsky were steeped in a *Naturphilosophisch* approach to nature. As critics from Leopold Zahn, through Robert Goldwater, Carola Giedion-Welcker, Daniel-Henry Kahnweiler and Werner Hofmann, to Sixten Ringbom, Volker Harlan, August Wiedmann, Armin Zweite, Richard Verdi, Harriet Watt, and others have noted from 1920 to the present, Klee's and Kandinsky's theories of art were grounded in the 19th century morphological/biological discourse of Romantic organicism rooted in *Naturphilosophie* and Goethe's theory of plant metamorphosis.²⁵³ Wiedmann has demonstrated that both Klee and Kandinsky *acknowledged* themselves as artists working in the Romantic tradition, while Roskill has shown that both were Nietzscheans.²⁵⁴ What is missing in the literature is a more thorough contextualization of the artists' aesthetic theories within contemporary neo-Romantic, *neue Naturphilosophisch*,

i.e. biocentric discourses. At issue are their contemporary intellectual affinities and parallels. What is needed is a historical contextualization of their respective *Weltanschauungen*. Evelin Priebe has pointed out [dass] "Kandinsky ... in den lebensmystischen Strömungen seiner Zeit wurzelt," and as Eleanor Jain contends, "bei Marc, Kandinsky und Klee wird die lebensphilosophische Gedanke der Verbindung des Geistigen mit dem Leben besonders deutlich."²⁵⁵

Even when discussing Klee's famous "Ich Kristall" statement made in his diary of 1915, Charles Haxthausen cites only Worringer as a source, ignoring Haeckel, who was -- along with Otto Lehmann -- the *neue Naturphilosoph* to declare crystals organic, i.e. related to a human subject such as Klee.²⁵⁶ While Werner Haftman acknowledged the importance of Endell's and Van de Velde's "Biological Romanticism" to Klee's work, and Ringbom expands on Hofmann's discussion of the contemporary morphological tradition -- including Haeckel -- in relation to his aesthetics, only Sarah Lynn Henry has discussed turn-of-the-century biocentrism in her account of Klee's intellectual origins.²⁵⁷ The way in which biocentric views, particularly Vitalism and Monism, revealed themselves in Kandinsky's thinking throughout his life has barely been touched upon in the literature. Only Jain, and Priebe, building on hints by Giedion-Welcker and Zweite, have begun to place Kandinsky into his proper biocentric context in relation to *Lebensphilosophie*, Bergson and Klages.²⁵⁸ Yet both Klee and Kandinsky were dyed-in-the-wool Monist Vitalists.

Already in his 1920 discussion of Klee, Leopold Zahn wrote that "Jeder Dualismus ist überwunden, der heimische Kampf mit dem Materiellen beendet...."²⁵⁹ As we have seen Klee state at the start of this section, "The aim of our theoretical work is always, in one form or another, the organisation of differences into unity, the combination of organs into an organism...."²⁶⁰ Klee's Monistic worldview is best summarized by Christof Hertel in an account of his teach-

ing written at the time of the artist's departure from the Bauhaus late in 1931.

klee ... zeigte uns die grosse synthese, die alles umfasst, das organismische wie das anorganische. die gleichen phänomene, die wir im biologischen und sozialen zu sehen gewohnt waren, wurden hier in der gestaltung auf einmal wieder aktuell. alles: zoologie, biologie, chemie, physik, astronomie, literatur, typografie trug dazu bei uns klar zu machen ... wie wir mit allem unseren sein und tun in der menschheit und im kosmischen rhythmus stehen und verankert sind.²⁶¹

Klee's former Bauhaus colleague Willi Baumeister wrote that "Ein Beispiel für eine grosse Synthese von Absoluten und Metamorphose ist Paul Klee, in dessen Werk sich die beiden Urkräfte zum 'Organischen' verbunden."²⁶²

Klee's texts resound with statements revealing his belief in a vital force animating nature, a Vitalism that in equating matter and energy is as Ostwaldian as it is Einsteinian:

Creative power [Kraft] is ineffable. It remains ultimately mysterious ... We are ourselves charged with this power, down to our subtlest parts. We may not be able to utter its essence, but we can move towards its source.... [I]t is up to us to manifest this power in its functions, just as it becomes manifest within ourselves. In all likelihood, it is itself a form of matter, although it cannot be perceived with the same sense as the more familiar kinds of matter.... Permeated with matter, it must take on living, actual form. It is thence that matter derives its life, acquiring order from its minutest particles and most subordinate rhythms all the way to its higher articulations.²⁶³

This force is sometimes articulated in a Bergsonian manner:

The inner impulse is the urge that leads to production. ... Nature is creative, and we are creative. Nature is creative down to the minutest scale and since the briefest scrutiny suffices to discern that, we too have begun on a small scale, emulating nature, it has been easy, under nature's guidance, to recognise our own creativity.²⁶⁴

As well as the *élan vital*, Klee affirms Bergsonian Becoming. As Jim Jordan put it, "One of Klee's key tenets ... is that art should be read in terms of formal genesis, with shape

growing out of shape as an expression of a 'Bergsonian' life force,"²⁶⁵ or as Giedion-Welcker did: "Living organisms and man-conceived structures are ... combined in homogenous blends swept along by a powerful current of life."²⁶⁶

We have seen that Kandinsky agreed with Gabrielle Münter "that essentially or eventually everything is one unity."²⁶⁷ The quotations at the start of this section illustrate Kandinsky's Monist *kosmovitale Einsfühlung*, and in an addendum to Charles Sirató's 1936 *Manifeste Dimensioniste* -- hitherto unnoticed in the Kandinsky literature -- the importance he placed on a Monistic synthesis of "matter" and "spirit."²⁶⁸ Arp highlighted Kandinsky's Vitalist impulse when he wrote of him in 1948: "Il évoque les forces des hauteurs et des profondeurs, les forces de la création pure. Il conjurait des forces originelles, impérissables, et les forçait d'affluer dans sa peinture et dans sa poésie."²⁶⁹ Paul Overy, when writing of Kandinsky's work of the thirties, is just as eloquent concerning his Vitalism:

It is the swarming, pulsating vitality of their outlines that suggests so emphatically that they are living organisms.... Here Kandinsky suggests the energy of life rather than, as in the Bauhaus works, the structure of life... In the Paris works a rich and vital life now inhabits the structures.²⁷⁰

Kandinsky's conclusion to *Point and Line to Plane* makes evident his Neo-Vitalist epistemology: "The aim of a theoretical examination is 1. to discover the living, 2. to make perceptible its pulsation, and 3. to establish the law-governed nature of life."²⁷¹ Focusing on a search for life, these words are incomprehensible without the biocentric discourse.

Closely related to Klee's and Kandinsky's Monism and Vitalism were their organicist aesthetics. Klee's organicist conception of the artwork is so well known that it need not be reiterated here, but while scholars have written of Kandinsky's organic theory of art, he is still not typically thought of as an organicist.²⁷² Already during his Munich years,

however, Kandinsky espoused an organic metaphor of art, seeing "painting as a kind of spiritual organism, made up -- like every material organism -- of many parts."²⁷³ At the Bauhaus, in keeping with the general shift in interwar Biozentrik, his organicism tended towards the more purely biological rather than the spiritual:

Die allgemeine Bewegung der Kunstgeschichte ... ist ein langsam vor sich gehender Vorgang, der im Ausgangspunkt rein äusserlich-praktisch-zweckmässige Gründe hat, wobei das 'rein Künstlerische' bloss als kaum sichtbarer Embryo zu beobachten ist, und der sich weiter zum ständigen Wachsen dieses Embryos entwickelt, bis sich daraus eine reine Gestalt des rein Künstlerischen ausbildet.²⁷⁴

Indeed, in *Point and Line to Plane*, Kandinsky was one of the earliest writers to employ the organic metaphor in relation to the development of abstract art: "Abstract art, despite its emancipation, is subject ... also to 'natural laws,' and is obliged to proceed [as] nature did previously, when it started in a modest way with protoplasm and cells, progressing very gradually to increasingly complex organisms. Today abstract art creates also primary art-organisms, whose further development the artist today can predict only in uncertain outline...."²⁷⁵ Kandinsky's organicism is also reflected in his interest in gestalt psychology, as the souvenirs of his encounter with Felix Krüger during Krüger's visit to the Bauhaus in 1931 demonstrate.²⁷⁶ Kandinsky's Vitalism, Monism and Organicism, i.e. his biocentrism, is important to emphasize because his ties to Theosophy and Anthroposophy, as well as Shamanism and Sufism -- repressed during the period of high Modernist art history before the 70s -- have now come to overshadow his other affinities.²⁷⁷ But while his and Klee's biocentrism is evident from their writings, the question arises as to the direct sources of their biocentrism.

The portion of Kandinsky's library now in Paris, despite its small size, contains an interesting selection of biocentric and related publications by Bergson, Dacqué, Krüger and

Ostwald. Apart from key *naturromantisch* classics such as Goethe, Schiller and Novalis, however, neither the part of Klee's library available to me, nor his writings, yield much information on the sources of his biocentrism. But this is also the case with Klee's much-vaunted scientific interests. Apart from two school science texts, we know little of either the literature he employed in his voluminous writings on nature and its processes, or those he used for his many artworks on the subject.²⁷⁸ As Henry, who has examined Klee's sources on physics notes, he "seems to have worked ... from a patchwork of information and concepts that helped to satisfy his inquisitive mind and that gave him the material to fashion his own theoretical and visual structures."²⁷⁹

What are we to make of this lack of information concerning Klee's philosophical sources? Though Klee was an avid reader, he was primarily interested in belle-lettres, particularly the classics of a wide range of periods and cultures. Still, K. Porter Aichele has demonstrated that, like Kandinsky, Klee was an enthusiastic reader of the Monist scientist Ostwald since 1904, and that -- as we have seen -- he adopted aspects of Ostwald's energeticist Monism.²⁸⁰ Klee also owned a 1914 edition of the most popular Monist writer, Wilhelm Bölsche's, best-seller *Das Liebesleben in der Natur*.²⁸¹ Bölsche's biologicistic, *vitalmystisch* aesthetics were expressed in pithy statements such as "Rafael und Beethoven beginnen schon im Schneekristall."²⁸² In light of this, one must consider the possibility that Klee's works of the late teens dealing with the sexual life of plants such as *Pflanzenliebe* of 1915, were inspired by Bölsche's book.²⁸³

A former economist, legal scholar and ethnographer, Kandinsky, like many intellectuals of his generation, rejected the prevailing positivistic and materialistic ideology of the second half of the 19th century. In his "Autobiographical Note" Kandinsky wrote: "As 'assistant' at the University of Moscow ... I began to notice that my earlier belief in the

beneficial value of the social sciences, and, ultimately, in the absolute rightness of positivistic methods had seriously diminished."²⁸⁴ While Kandinsky was not as steeped in the German Romantic tradition as were Klee, Marc, Arp, Gropius or Schlemmer, once he was in Germany, his rejection of Positivism manifested itself through the forging of links to the brilliant Neo-Romantic revival of *fin-de-siècle* Munich. Thus -- like Klee and Marc²⁸⁵ -- Kandinsky became a member of Stefan George's and Karl Wolfskehl's circle, which included *Vitalmystiker*, Monists and *Reformbewegung* figures such as Klages, Hermann Obrist, Ricarda Huch, Marie Buchhold and Raoul Francé's later admirer Stefan Zweig.²⁸⁶ Kandinsky had particularly close contacts with Obrist -- Haeckel's principle artistic disciple -- starting around 1902.²⁸⁷ Though Kandinsky would have heard of the circle by 1902, he participated probably only after 1903, once Klages had broken with George and Wolfskehl. Like Klee, Kandinsky would have heard of Klages from others in the circle, and in any case *Lebensphilosophie* was "in the air" in turn-of-the-century Munich.²⁸⁸ What is important to note in this connection is that rather than being merely a hotbed of occultism, as some Kandinsky scholars have been eager to demonstrate, the "Kosmische Runde" was above all a centre of aesthetic *Lebensphilosophie*, Neo-Vitalism and Monism, i.e. of a Nietzschean biocentrism.²⁸⁹

While Klee, like Kandinsky, became part of the Wolfskehl circle after Klages' departure, he had another indirect channel to Klages' thought, Alfred Kubin. Kubin approached Klee in 1910 after seeing an exhibition of Klee's prints and drawings in Switzerland. The next January Kubin payed Klee a visit, and out of this developed a somewhat uneasy friendship. While Kubin had not met Klages at this point, he had been in the Wolfskehl circle early on, and had admired Klages and his ideas from afar.²⁹⁰ Haftmann quotes from Kubin's novel *Die Andere Seite* of 1908-09 on the contemplation of nature and the realization of its unity: "For hours on end I now tried to

contemplate stones, flowers, animals and men in the mass. In this way my eye sharpened.... More and more, I felt that there is a common bond between everything."²⁹¹ In 1911, after a chance meeting on the train, Kubin and Klages became friends. As Klee's and Kubin's friendship developed, Kubin would surely have spoken to the younger man of his enthusiasm for Klages' writings on cosmic rhythms, on human products such as writing and art as expressions of these rhythms, on the necessity for the preservation of nature, and on the destruction of nature as a manifestation of the opposition between *Geist* and *Seele*. The material proof of Klee's interest in Klages is his copy of Klages' 1922 book *Vom kosmogonischen Eros*.²⁹² Indeed, the term "cosmogenetic" recurs in Klee's oeuvre: in *Unendliche Naturgeschichte* he writes of a "cosmogenetic moment,"²⁹³ and Klee's well-known 1923 watercolour *Eros* might constitute a commentary on Klages' book.²⁹⁴

Haeckel and Driesch -- and possibly Francé -- were also sources for Klee's and Kandinsky's biocentrism. As Grohmann notes, Klee was an avid reader from early in this century on,²⁹⁵ and given Klee's interest in nature and his reading habits, it is hard to imagine that he would not have read Haeckel's enormously popular *Die Welträtsel* after it was first published in 1899. While, as far as I can tell, Klee's library did not contain a copy of this book at the time of his death, we do know that he owned a copy of Haeckel's *Kunstformen der Natur*. Indeed this book by Driesch's teacher might account for Klee's visit on his first Italian trip to a scientific institute closely associated with Driesch.²⁹⁶ At Easter in 1902 Klee was at the German-founded Zoologisches Station (Stazione zoologica) in Naples, where Driesch, just a couple of seasons earlier, had made his observations of the regenerative capabilities of dissected sea-urchin blastomeres, which led him to revive Aristotle's Vitalist concept of the "entelechy," and so to launch Neo-Vitalism as a movement. Klee was very impressed by the unusual marine forms at the Station, and he enjoyed its

excellent library with Hans von Mareés' frescos, as much as he did its sea creatures.²⁹⁷

There is little doubt that Klee would have heard of Driesch at the Station even though the scientist was not in residence, since a controversy over Driesch's sea-urchin research was then raging.²⁹⁸ If not in Naples, Klee had the chance to meet Driesch on the occasion of his 1925 lecture on "Das Unbewusste" at Weimar. According to Will Grohmann, Klee "found himself arguing on all sorts of subjects, scientific as well as artistic," after Bauhaus events, including Driesch's lecture.²⁹⁹ As we have seen in Chapter Two, Driesch's science, along with Goethe's, inspired the rise of the Holist/Organicist complex, the thinking of which was so close to Klee's organicist conception of nature. This science would have appealed to Klee as much as did Driesch's Neo-Vitalist *neue Naturphilosophie*, the biocentric philosophy which Driesch focussed his energies on after 1909. Klee's interest in Driesch (at least by 1925), and in Haeckel's scientific imagery; both his and Kandinsky's fascination with scientific imagery at the Bauhaus; and Kandinsky's early knowledge of Darwinism and Kropotkin³⁰⁰: all this puts into a more coherent framework Barnet's -- I think -- correct speculation concerning the ultimately Haeckelian nature of the biological imagery in Kandinsky's work of the 1930s. But, as Hofmann has suggested, Kandinsky's morphological discussion in *Point and Line to Plane* already reveals his awareness of Haeckel's writings, if not those of the -- in Germany -- less accessible D'Arcy Wentworth Thomson.³⁰¹ Though Kandinsky does not refer directly to Haeckel in his writings, like Klee neither does he refer to the other scientific source which Barnet has demonstrated he used, i.e. his encyclopedia. Barnet speculates on the possibility of Kandinsky's sources being the Darwinian aspect of theosophy and Steiner's writing on Haeckel, but it should be sufficient to refer to Kandinsky's friendship with the deeply-Haeckelian Obrist during the early years of his

Munich period in order to account for his knowledge of the German biologist. As Barnett writes, "Kandinsky's images of amoebas, embryos and marine invertebrates convey a spiritual meaning of beginning, regeneration and a common origin of all life," that is, they produce a meaning which is intelligible only with a knowledge of the interwar biocentric discourse.³⁰² As in the cases of the other Bauhaus masters, Barnett comes to the correct conclusions, but without employing the requisite terminology, a terminology which would properly contextualize him.

Klee's biocentric *Weltanschauung*, his organicist aesthetic, his large corpus of biomorphic Modernist art, and his interest in scientific imagery, all render him one of the most paradigmatically Bioromantic of artists. Kandinsky's early abstract work is a principal inspiration for biomorphic Modernism as a style and he is one of its great practitioners in the 1930s. But because of his mysticism his case is more complex than Klee's. Kandinsky underwent a change during his Bauhaus years from a metaphysical position to one infused by the naturamorphic analogy, one more typical of the *Biozentrik* so pervasive at the Bauhaus and in Weimar Germany, after it. Thus, in the interwar period, Kandinsky can also be seen to be an important Bioromantic artist.

The presence of Klee, Kandinsky, Gropius, Itten, Schlemmer, Moholy-Nagy, Hannes Meyer, and Mies; Gropius' friendship with Behne and Taut; as well as the school's contacts with major figures of interwar biocentrism such as Driesch, Ostwald, Klages, Keyserling, Prinzhorn, and Francé, resulted not only in an atmosphere suffused with biocentric ideas, but one which actively participated in interwar biocentric intellectual life. It is within this context that one should regard Gropius' 1922-23 shifting of the Bauhaus' gears. As Karin Hirdina points out, this shift was related to the discourse around function, itself informed by ideas of social and biological utility.³⁰³ Its groundwork was layed earlier, how-

ever. As Franciscono writes:

By 1921 modern architectural thinking almost everywhere was moving from an emphasis upon personal inspiration, the expression of emotion, and in Germany upon utopian projects, toward geometry, 'objective laws' of formal construction, and strict accommodation to utilitarian, especially industrial requirements. This process can be traced in Gropius' speeches of 1922 through 1924, the language of which reflects accurately the changing aesthetic assumptions of the period.³⁰⁴

But in the context of the Bauhaus and of Weimar Germany in general during the early 1920s, this process was necessarily one informed by biocentrism. Just as an awareness of the biocentrism inherent to the *Jugendbewegung* and the *Reformbewegung* in general is necessary for a full understanding of Moholy-Nagy's origins, the biocentrism of the Bauhaus is also the proper context for understanding the development of Moholy-Nagy's New Vision, the hiring of the Left-wing biocentric Constructivist Hannes Meyer, and the development of Kállai's formulation of *Bioromantik* at the Meyer Bauhaus, topics I examine in the next two chapters.

Endnotes

1. Friedrich Nietzsche, *The Birth of Tragedy* (1872). Francis Golfing, trans. (New York: Anchor/Doubleday, 1956), 56.
2. Ernst Haeckel, *The Riddle of the Universe*. Translated by Joseph McCabe (New York: Harper & Bros., 1900), 20.
3. Adolf Behne, "Biologie und Kubismus," *Die Tat* (1916): 705.
4. Bruno Taut, *Alpine Architecture* (1916), quoted in Ian Boyd Whyte, *Bruno Taut and the Architecture of Activism* (Cambridge: Cambridge University Press, 1982), 73-4.
5. Heinrich Stadelmann, *Unsere Zeit und ihre neue Kunst* (Berlin: Der Zirkel, Architekturverlag, 1916), 4.
6. Lucia Schulz, "Symbole," *Freideutsche Jugend*, 5, no. 10 (1919): 406-409. Reprinted in Rolf Sachsse, *Lucia Moholy* (Berlin: Bauhaus-Archiv, 1995), 71.
7. Raoul Hausmann, "Optophonetik," *Ma 7*, no. 1 (15 October 1922): 3-4. Reprinted in: Raoul Hausmann, *Sieg Triumph Tabak mit Bohnen. Texte bis 1933*. Volume 2. Michael Erlhoffer, ed., (Munich: text + kritik, 1982): 52.
8. László Moholy-Nagy, Contribution to "Vita az új tartalom és az új forma problémájáról" [Argument on the problem concerning the new content and the new form]; a series of articles in *Akasztott Ember* [Hanged Man] no. 2 (31 December 1922).
9. Paul Klee [1923] *Notebooks, Volume 2, The Nature of Nature*. Edited by Jürg Spiller. Translated by Heinz Norden. (Woodstock, N.Y.: The Overlook Press, 1992), 6.
10. Raoul Hausmann, "Manifest der Natur," (unpublished text of ca. 1921). In: Hausmann, *Sieg Triumph Tabak mit Bohnen*, 45.
11. Raoul Hausmann, "Ausblick," *G* no. 3 (June 1924): 15, 14.
12. Kurt Schwitters, "Art and the Times," *Ray* (1927), quoted in: John Elderfield, *Kurt Schwitters* (London: Thames and Hudson, 1985), 137.
13. Lazar El Lisstizky, "Nasci," *Merz* no. 8-9 (April-July 1924).
14. Jean Arp, an untitled text of 1925 and introduction to Max Ernst, *Histoire Naturelle* (1926). In: Marcel Jean, ed., *Arp on Arp: Poem, Essays, Memories*. Joachim Neugroschel trans. (New York: Viking, 1972), 24, 29. The translation has been slightly

adapted by me.

15. Jean Arp, "Strasbourg Configurations," in: Jean, ed., *Arp on Arp*, 47.

16. This statement is in reference to Lissitzky's "Nasci," discussed below. Patricia Railing, "'The Machine is no More Than a Brush': Morphology of Art and the Machine in Russian Avant-Garde Theory and Practice," *The Structurist* no. 35-36 (1995-96): 49.

17. Stephen Mansbach, "Attitudes Towards Nature in Some Early Twentieth Century Art," *The Structurist* No. 23/24 (1983/1984): 87.

18. *Ibid.*, 87, 89, 90.

19. Haus is refering here to Moholy-Nagy and Van Doesburg. Andreas Haus, *Moholy-Nagy: Fotos und Fotogramme*, (Munich: Schirmer/Mosel, 1978), 48. Note that Railing's remark is made within the context of an article which demonstrates El Lissitzky's organicism.

20. Peter J. Bowler, *The Non-Darwinian Revolution: Reinterpreting a Historical Myth* (Baltimore: The Johns Hopkins University Press, 1988), 193. Though Klee is expressing Monist views in the passage Roskill quotes, the word "Monism" does not appear in the index of the book, an account of "the thought of [Klee's] time." Mark Roskill, *Klee, Kandinsky and the Thought of their Time* (Chicago: University of Illinois Press, 1992), 99.

21. Eleanor Jain, *Das Prinzip Leben. Lebensphilosophie und Ästhetische Erziehung* (Frankfurt/Main: Peter Lang, 1993), 142.

22. Timothy O. Benson, *Raoul Hausmann and Berlin Dada* (Ann Arbor: UMI Research Press, 1985), 8.

23. Railing, "'The Machine is no More than a Brush'," 50.

24. Sibyl Moholy-Nagy, *Moholy-Nagy: Experiment in Totality*. Second edition. (Cambridge Mass.: MIT Press, 1969), xi; Ernő Kállai, "Kunst und Technik," *Sozialistische Monatshefte* 37, no. 11 (November 1931): 1095-1103.

25. Daniel Gasman, *The Scientific Origins of National Socialism: Social Darwinism in Ernst Haeckel and the German Monist League*. (London: Macdonald and New York: American Elsevier Inc., 1971), 155. Jürgen Wolschke-Bulmahn, *Auf der Suche nach Arkadien: Zur Landschaftsidealen und Formen der Naturaneignung in der Jugendbewegung und ihrer Bedeutung für die Landespflege*. (Munich: Minerva, 1990).

26. Janice Schall, "Rhythm and Art in Germany, 1900-1930" (Ph.D. dissertation, University of Texas at Austin, 1989), 34. See also Winfried Mogge and Jürgen Reulecke, *Hohe Meissner 1913. Der Erste Freideutsche Jugendtag in Dokumenten und Bildern* (Cologne: Verlag Wissenschaft und Politik, 1988), 39-41 and 74.

27. Ulrich Linse, *Ökopax und Anarchie: Eine Geschichte der ökologischen Bewegungen in Deutschland* (Munich: Deutscher Taschenbuch-Verlag, 1986), 60.

28. Quoted in *ibid.*

29. Anna Bramwell, *Ecology in the 20th Century: A History* (New Haven: Yale University Press, 1989), 268, note 4. Also pp. 180-81.

30. It appeared in a cheap, popular edition in 1903. Members of the Youth Movement, born in the 1880s, would have been reaching puberty by this time. On Haeckel in early 20th century German intellectual life, see Donald E. Gordon, *Expressionism: Art and Idea* (New Haven: Yale University Press, 1987), 9, 21-2. On the *Wandervogel*, p. 130.

31. Gordon, *Expressionism*, 2. See Chapter 1 on Nietzsche, especially 14-19. On Nietzsche and the German avant-garde, see also: Roskill, *Klee, Kandinsky and the Thought of Their Time*, "The Impact of "Nietzsche," 54-63; David Seth Taylor, "Left-Wing Nietzscheans: The Politics of German Expressionism, 1910-1920" (Ph.D., New York University, 1989); Schall, "Rhythm and Art in Germany," Chapters 1, 2.

32. Charles Kessler, "Sun Worship and Anxiety: Nature, Nakedness and Nihilism in German Expressionist Painting," *Magazine of Art* (November 1952): 307. On the connection between Pantheism, Vitalism and Expressionism, see also August Wiedmann, *Romantic Roots in Modern Art* (Old Woking, Surrey: Gresham Books, 1979), 244-5.

33. Wiedmann, *Romantic Roots in Modern Art*, 21.

34. Corona Hepp, *Avantgarde: Moderne Kunst, Kulturkritik und Reformbewegungen nach der Jahrhundertwende* (Munich: DTV, 1987), Chapter 4, "Bruder und Fremdling," 89-148, 174-8; Jain, *Das Prinzip Leben*, 142; Schall, "Rhythm and Art in Germany," 36-42; Werner Kindt, ed., *Die Wandervogelzeit* (Düsseldorf: Eugen Diederichs Verlag, 1968), 11-12; Gordon, *Expressionism*, 130. On Taut: Whyte, *Bruno Taut*, 7. On Bayer's origins in the Austrian Youth Movement: Alexander Dorner, *The Way Beyond 'Art': The Work of Herbert Bayer* (New York: Wittenborn, Schultz, Inc., 1947), 131; Herbert Bayer, Preface to *Herbert Bayer: Painter Designer Architect* (New York: Reinhold, 1967), 9.

35. On this unsuccessful project, see Benson, "Raoul Hausmann and Berlin Dada," 10. Given Baader's background in the Garden City Movement (p. 8), Friedländer's presence on the Berlin Activist art and cabaret scene (pp. 10-11), the Haeckelian Monism of the trio, Friedländer's radical anti-anthropocentrism (pp. 11-12) and the fame of Klages' speech in Activist circles, it is conceivable that it was an inspiration for this -- in Expressionist circles -- highly unusual title, unusual because so much Expressionism of the time was "man"- rather than earth-centric. Walther Rilla eventually published a journal entitled *Die Erde. Das Kampforgan des revolutionären Geistes* in Breslau (now Wroclaw), in 1919-20, and Hausmann contributed. See the ad in *Der Gegner*, 1, no. 2-3 (May 1919): 33 and the bibliographical description in Hannah Höch, *Eine Lebenscollage*. Volume 1. (Berlin: Argon, 1995), 532-33.

36. Quoted in Wiedmann, *Romantic Roots in Modern Art*, 245. See also Schall, "Rhythm and Art in Germany," 41 and Jain, *Das Prinzip Leben*, 142.

37. Felix Klee, ed., *The Diaries of Paul Klee, 1898-1918* (Berkeley: University of California Press, 1968), 1008.

38. Robert Goldwater, *Primitivism and Modern Art*. (1938) Second edition. (Cambridge MA: The Harvard University Press, 1986), 135. On this theme in Marc's art see Johannes Langer, "Symbole auf die Altäre der kommenden geistigen Religion, Zur Sakralisierung des Tierbildes bei Franz Marc," *Jahrbuch der Staatlichen Kunstsammlungen in Baden-Württemberg* 18 (1981): 79-98.

39. Ernő Kállai, "Bioromantik," *Forum* (1932): 271. *Der Stier*, which Kállai saw in the Koehler collection in Berlin, is now in the Guggenheim Museum, New York. On Marc's Monist tendencies, see also Carl Einstein, *Die Kunst des 20. Jahrhunderts* (Berlin: Propyläen, 1926), 130. On Marc and German Romanticism, see Carla Schulz-Hoffmann, "Franz Marc und die Romantik. Zur Bedeutung romantischer Denkvorstellungen in seinen Schriften," in: Rosel Gollek, ed., *Franz Marc 1880-1916* (Munich: Prestel, 1980), 95-111.

40. Benson, *Raoul Hausmann and Berlin Dada*, 67.

41. Wiedmann does not even mention Haeckel, Monism or Ostwald. Neither does Jürgen Glaesemer in his "Klee and German Romanticism," in which no mention is made of Monism, even in a discussion of Klee's tendency to treat binaries as "forces working together to create the whole." In: Caroline Lanchner, ed., *Paul Klee* (New York: MOMA, 1995): 65-81. Glaeser quotes Klee on p. 76.

42. Haeckel, *The Riddle of the Universe*, 341 and Haeckel, *Kunstformen der Natur* (Leipzig/Vienna: Bibliographisches Institut, 1899)

43. See Christoph Kockerbeck, *Ernst Haeckels 'Kunstformen der Natur' und ihr Einfluss auf die deutsche bildende Kunst der Jahrhundertwende* (Frankfurt/Main: Peter Lang, 1986); Siegfried Wichmann, *Jugendstil Art Nouveau: Floral and Functional Forms* (Boston: Little, Brown and Co., 1985); Erika Krause, "L'influence de Ernst Haeckel sur L'Art Nouveau," in Jean Clair, ed., *L'ame au corps: Arts et sciences 1793-1993* (Paris: Réunion des musées nationaux, 1993), 342-50.

44. Benson, *Raoul Hausmann and Berlin Dada*, 80-81. Hausmann would have become aware of the turn of the century biocentric literature through his work between 1909 and 1914 as a designer for the Eugen Diederichs Verlag in Jena, one of the chief publishers of such literature in Germany. His readings of the time reflect an interest in the vitalistic-anarchistic writings of figures such as Stefan George, Walt Whitman, Maurice Maeterlinck, and Nietzsche. See Eva Züchner, ed., *Der Deutsche Spiesser ärgert sich: Raoul Hausmann 1886-1971* (Stuttgart: Hatje, 1994), 16-21, 280.

45. See Chapter Four on this. Reinhard Döhl, *Hermann Finsterlin: Eine Annäherung* (Stuttgart: Verlag Gerd Hatje, 1988), 63-4. Baader, an architect, participated in the *Reformbewegung*, specifically the Garden City Movement. Benson, *Raoul Hausmann and Berlin Dada*, 8. Hausmann's Anarchism dates to 1915, when, through Hannah Höch, he met the Anarchist writer Franz Jung and the Anarchist psychoanalyst Otto Gross in Berlin. See Züchner, ed., *Der Deutsche Spiesser ärgert sich*, 280.

46. See Timothy O. Benson, "Fantasy and Functionality," in his *Expressionist Utopias: Paradise, Metropolis, Architectural Fantasy* (Los Angeles: Los Angeles County Museum of Art, 1993), 37. Typically, Behne's biocentrism has been ignored in the literature on him. See, e.g., Bernd Lindner, "'Auf diesen Berg...'" Adolf Behne - Vermittler der Moderne," in Henrike Junge, ed., *Avantgarde und Publikum: Zur Rezeption avantgardistische Kunst in Deutschland 1905-1933* (Cologne: Böhlau, 1992), 7-15. On Hausmann's friendship with Golyscheff, see Züchner, ed., *Der Deutsche Spiesser ärgert sich*, 282.

47. On Taut and Steiner: Ian Boyd Whyte, Introduction, *The Crystal Chain Letters: Architectural Fantasies by Bruno Taut and his Circle* (Cambridge Mass.: The MIT Press, 1985), 8. On Taut and Kropotkin: Marcel Franciscono, *Walter Gropius and the Creation of the Bauhaus in Weimar: The Ideals and Artistic Theories of its Founding Years* (Urbana: University of Illinois Press, 1971), 121; and Whyte, *Bruno Taut*, 85, 101, 155. That Kropotkinian Anarchism persisted in Taut's and others' views

is demonstrated by their *Siedlungen* of the 1920s. See Fritz Neumeyer, "Metropolis or the Dissolution of the City? The Struggle of the 1920s Against the Big City," in Jean Clair, ed., *The 1920s: Age of the Metropolis* (Montreal: MMFA, 1991), 314.

48. Behne, "Biologie und Kubismus," 700. Finstlerin's undated letter is from around 1920. In: Whyte, *The Crystal Chain Letters*, 86. Note that Alexander Dorner uses "biogenetic" in his Vitalist, Bergsonian conception of art history. (*The Way Beyond Art*, 35)

49. See Behne, *Die Wiederkehr der Kunst* (Berlin: Kurt Wolff, 1919), e.g. 24. See also Whyte, *Bruno Taut*, 61. Luckhardt is quoted in Whyte, *The Crystal Chain Letters*, 31.

50. Bruno Taut, "Für die neue Baukunst!" *Das Kunstblatt* 3, no. 1 (January 1919): 16.

51. Benson intimates this in "Fantasy and Functionality," 37. Haeckel was preceded by Spencer, who in 1898 held that "the growth of crystals and organisms was 'an essentially similar process.'" Peter Collins quotes Spencer in his *Changing Ideals of Modern Architecture 1750-1950* (Montreal: McGill University Press, 1965), 151.

52. In Whyte, *The Crystal Chain Letters*, 31.

53. Whyte, *Bruno Taut*, 198 and Döhl, *Hermann Finsterlin*, 64. That Haeckel's views on crystals were fairly well-known by the mid-teens is demonstrated by ghost researcher Baron von Schrenk Notzing's employment of Haeckel's teaching of the unity of nature as part of his explanation of the ecotplasmic phenomenon: "...as Haeckel pointed out, in his *General Morphology of Organisms*, there is no hard and fast separation between the building of regular crystals and that of organic structures, so that geometrical forms are ultimately the foundation of both." (p. 281) As we shall see, Francé's elaboration of this idea exercised the greatest influence on the development of a biocentric Constructivist discourse. Baron von Schrenk Notzing, *Phenomena of Materialization: A Contribution to the Investigation of Mediumistic Teleplastics* [1913-14] trans. E.E. Fournier d'Albe (London: Kegan Paul, Trench, Trubner, 1920). C.f. also: "Result of the Microscopic Examinations," 246-50.

54. Whyte, *Bruno Taut*, 196-7.

55. On Luckhardt: Whyte, *The Crystal Chain Letters*, 113. On Finsterlin: Döhl, *Hermann Finsterlin*, 63-4. For an illustration of this portrait, see Erika Krause and Rosemarie Nöthlich, *Ernst-Haeckel-Haus der Friedrich-Schiller-Universität*

Jena, an issue of *Museum* (Braunschweig: Georg-Westermann-Verlag, 1990): 33. The Haeckel Museum opened on 31 October 1920. (p. 126) Walter had moved to Munich in 1918, and was involved in setting up the Ernst Haeckel Museum in his father's house in 1919-20. See Horst Franke, "Das Ernst-Haeckel-Haus in Jena, *Neue Museumskunde* 27, no. 4 (1984): 224-5.

56. See "Biologie und Kubismus" and *Die Wiederkehr der Kunst*, in which Haeckel is characterized as "vielleicht" der "letzter Vertreter" "der Rationalismus und Positivismus." (p. 58)

57. Adolf Behne, *Der moderne Zweckbau* (Munich: Drei Masken, 1926), 35-6.

58. Behne, "Biologie und Kubismus": 695. See: Von Uexküll, *Bausteine zu einer biologischen Weltanschauung* (Munich: F. Bruckmann, 1913). For von Uexküll's critique of the Monists' "materialism," see Chapter Two.

59. Behne, *Die Wiederkehr der Kunst*, 57-8. On Hausmann and Marcus see Benson, *Raoul Hausmann and Berlin Dada*, 11-12 and Haus, *Moholy-Nagy: Fotos und Fotogramme*, 65. Ernst Marcus, *Das Problem der exzentrischen Empfindung* (Berlin: Verlag der Sturm, 1918). On Marcus, Hausmann and Moholy-Nagy, see below. On Francé, Marcus, von Uexküll and psychovitalism/psychobiology, see Chapter Two. C.f. Walter Erben's description of von Uexküll's epistemology. On this, see Chapter Two. (Erben in *Karl Ernst Osthaus. Leben und Werk*. Recklinghausen: Aurel Bongers, 1971, 101)

60. Salomo Friedländer, "Aus den Tiefen des Erkennens. Zum 70. Geburtstag des Philosophen Ernst Marcus am 3. September," *Münchener Neueste Nachrichten* 79 no. 244 (3 September 1926): 1. Quoted in Eva Züchner, *Der Deutsche Spiesser ärgert sich: Raoul Hausmann 1886-1971* exh. cat. (Stuttgart: Hatje, 1994), 24. On Marcus, see Züchner, 24-27 and Andreas Haus, *Moholy-Nagy: Fotos und Fotogramme* (Munich: Schirmer/Mosel, 1978), 64-8.

61. Behne, *Die Wiederkehr der Kunst*, 25.

62. Behne, "Biologie und Kubismus," 697 and "Die Zukunft unserer Architektur," *Sozialistische Monatshefte* 27 (31 January 1921). Quoted in Whyte, *Bruno Taut*, 194-5. On Kandinsky's organicism, see below.

63. In Whyte, *The Crystal Chain Letters*, 77.

64. Inscribed on the work *Cliffs, Lightning, Fire, Tower of Glass* (1920), on display at the "Crystalizing-Engineering-Delirium" exhibition curated by Detlef Mertens, and held at the Design Exchange, Toronto, January-April 1997. C.f. also Hablik's work *Triumph der Gesetze in der Natur* of 1924 in that

same exhibition.

65. Behne, *Die Wiederkehr der Kunst*, 29.

66. Selection from László Moholy-Nagy, "Erdő, Május, Háború" [Forest, May, War], first published in *Jelenkor* [The present age], no. 6 (September 1918). This translation by Oliver Botar was published in *Hungarian Studies Review* 21, nos. 1-2 (Spring-Fall 1994): 108-9.

67. Floris M. Neusüss, *Das Fotogramm in der Kunst des 20. Jahrhunderts* (Cologne: DuMont, 1990), 18.

68. Haus, *Moholy-Nagy*, 16. Thanks to Alain Findeli for alerting me to the differences between the English and German versions of Haus.

69. Sibyl Moholy-Nagy, *Experiment in Totality*, 2nd ed. (Cambridge: MIT Press, 1969), 44; xvii.

70. László Moholy-Nagy, Review of Árpád Garami, *Gyötrődő, szerelmes tavasz* [Anguished loving spring], *Jelenkor* no. 5 (April 1918), 159.

71. See Iván Hevesy's translation of Whitman's poem about male-female sexuality as an expression of the forces of nature published under the title "Walt Whitman verseiből" [From the poems of Walt Whitman], *Ma* [Today] (1 June 1918): 74; and of "Teérted ó demokrácia!" [For you, oh democracy!], *Ma* (20 November 1918): 134.

72. Sibyl Moholy-Nagy expressed doubt that her late husband had read Bergson, though she correctly recognized Bergsonian elements in his thought. See: *Experiment in Totality*, xvi.

73. Babits published a review article on Bergson's work in *Nyugat* [Occident] in 1910. The article is reprinted as the preface to Bergson's *Teremtő fejlődés* [Creative evolution]. Translated by Valéria Dienes. (Budapest: Magyar Tudományos Akadémia, 1930), I-XXII. On Babits and Moholy-Nagy, see Ferenc Apró, "Babits Szegeden" [Babits in Szeged] (Szeged: Somogyi Könyvtár, 1983): 141-2. While the two might have met when Babits taught at Moholy's high school in Szeged in 1906, Apró holds that they certainly became friends in Budapest around 1913. In any case, Moholy would have read Babits' article in *Nyugat*, since Moholy's "intellectual development was first influenced decisively by *Nyugat*," as he put it himself in his letter to Antal Németh of 18 July 1924. In: Krisztina Passuth, *Moholy-Nagy* (London: Thames and Hudson, 1985), 396. See also Bodri, "Moholy-Nagy László levelei Babits Mihályhoz" [László Moholy-Nagy's letters to Mihály Babits], *Tiszatáj* [The Tisza region] 26, no. 8 (1972).

74. On Dienes and *Bergsonisme* in Hungary, see Csaba Pléh, "A Hungarian Bergsonian Psychologist: Valéria Dienes," *Hungarian Studies* 5, no. 1 (1989): 141-5. The interest in Bergson -- as well as other *Lebensphilosophen* such as Nietzsche, Simmel and James -- was reflected in the publications on them in the journal *Huszadik Század* [The twentieth century] early in the century, and particularly after 1910. See Mary Gluck, *Georg Lukács and his Generation 1900-1918* (Cambridge Mass.: Harvard University Press, 1985), 90, 145-6.

75. See Hermann, "A XX. század elejének magyar filozófiájáról" [On early 20th century Hungarian philosophy], introduction to Endre Kiss and Kristóf János Nyíri, eds., *A magyar filozófiai gondolkodás a századelőn* [Hungarian philosophical thinking early in the century] (Budapest: Kossuth, 1977), 21-2. On Nietzsche's influence in Hungary, see Endre Kiss, "Nietzsche századelőnk filozófiai életében, különös tekintettel Fülep Lajosra és Prohászka Ottokárra" [Nietzsche in our early twentieth century philosophical life, with special reference to Lajos Fülep and Ottokár Prohászka] in Kiss and Nyíri, eds., *A magyar filozófiai gondolkodás a századelőn*, 165ff.

76. This was the case even if the Germans' attitude towards Haeckel was complicated: early in the century Kurt Hiller and his friends were reacting against Haeckelian Monism, which they saw as outdated though they agreed with it. Some, such as Hiller's closest friend Arthur Kronfeld were openly Monist. See Hiller, *Leben gegen die Zeit [Logos]* (Reinbeck bei Hamburg: Rowohlt, 1969), 37, 56-7, 64.

77. On German Activism, see Whyte, Bruno Taut, and Júlia Szabó, *A magyar Aktivizmus művészete* [The art of Hungarian Activism] (Budapest: Corvina, 1981), 15-31. On the connections between German and Hungarian Activism, see Szabó, 26-7.

78. Szabó, *A Magyar Aktivizmus művészete*, 17. She refers to Paulsen's *Expressionismus und Aktivizmus* (Strasbourg, 1934).

79. Whyte, Bruno Taut, 65.

80. Ibid.

81. Szabó, *A magyar Aktivizmus művészete*, 20-1.

82. Quoted in Sibyl Moholy-Nagy, *Experiment in Totality*, 11-12. Unfortunately, the Hungarian original of these texts has been lost, and so it is not possible to check for their provenance or for the accuracy of their translations. Accordingly, they must be employed with caution. (Information courtesy of Hattula Moholy-Nagy.)

83. Walter Z. Laqueur, *Young Germany. A History of the German Youth Movement* (London: Routledge & Keegan Paul, 1962), 101-103.
84. For the time and circumstances of Moholy's arrival in Berlin, see Oliver Botar, "An Activist-Expressionist in Exile: László Moholy-Nagy 1919-1920" in: Belena S. Chapp, ed., *László Moholy-Nagy: From Budapest to Berlin 1914-1923* (exh. cat.) (Newark, Del.: University Gallery, University of Delaware, 1995), 74.
85. Botar, "An Activist-Expressionist in Exile," 74-5. In addition to the portrait, Harmsen received several water-colours from Moholy-Nagy, which were auctioned in Munich in the early 1980s. Information courtesy of Hattula Moholy-Nagy.
86. Ibid.
87. Both Lucia Moholy and Sibyl Moholy-Nagy specify Schairer as Moholy's main source of assistance after his arrival. Lucia Moholy, *Moholy-Nagy: Marginal Notes, Documentary Absurdities* (Krefeld: Sherpe-Verlag, 1972), 51 and Sibyl Moholy-Nagy, *Experiment in Totality*, 17.
88. Unless otherwise noted, biographical information on Schairer is from the entries under his name in the *Deutsches Biographisches Archiv. Neue Folge* (Munich: K.G.Sauer, 1982), fiche FF1130.
89. Botar, "An Activist-Expressionist in Exile," 75-6.
90. Sibyl Moholy-Nagy, *Experiment in Totality*, 17-19.
91. Botar, "An Activist-Expressionist in Exile," 76. Schulz began a job with the publisher Ernst Rowohlt on 1 June 1920.
92. Among the occult groups popular at the time were the Anthroposophists and Otmar Zar-Adusht Ha'nish's neo-Zoroastrian and health-conscious "Mazdaznan" creed. Botar, "An Activist-Expressionist in Exile," 76.
93. Ibid., 77.
94. Ibid., 78.
95. See Laqueur, *Young Germany*, 100-101; Dietmar Schenk, *Die Freideutsche Jugend, 1913-1919/20: Eine Jugendbewegung in Krieg, Revolution und Krise*, Münster and Hamburg: Lit Verlag, 1991, 307; and A. Messer, *Die Freideutsche Jugendbewegung. Ihr Verlauf von 1913 bis 1922* (Langensalza: Hermann Beyer & Söhne, 1922).

96. On the direct connection between Pfemfert's circle around *Die Aktion* and Vogeler's Barkenhoff commune through the presence in 1919 of Vogeler's wife's then lover Ludwig Bäumer (who was a member of the Bremen council during the revolution early in 1919), see Bernd Stenzig, "'Von einem Auferstehenden, der nicht mehr zu beirren ist,'" in *Heinrich Vogeler. Vom Romantiker zum Revolutionär. Ölbilder, Zeichnungen, Grafik, Dokumente von 1895-1924* (Bonn: Bonner Kunstverein, 1982), 108. Vogeler designed at least one cover (*Ekstase* or *Vision*) for *Die Aktion*, 30, no. 5 (May 1914). (p. 136)

97. Schenk, *Die Freideutsche Jugend*, 117.

98. Heinrich Vogeler and other members of Barkenhoff such as Johann Kneif, for example, played active roles. On the Bremen Soviet and Vogeler's role in it, see David Erlay, *Worpswede - Bremen - Moskau. Der Weg des Heinrich Vogeler* (Bremen: Schöne-mann Universitätsverlag, 1972), 94-102.

99. Reinhard Preuss, *Verlorene Söhne des Bürgertums. Linke Strömungen in der deutschen Jugendbewegung 1913-1919* (Cologne: Wissenschaft und Politik, 1991), 210. This was evidently a more radical version of Schairer's "religious Socialism."

100. Quoted in Laqueur, *Young Germany*, 114. On this meeting, see also Schenk, *Die Freideutsche Jugend*, 112-17. Not untypically, Vorwerk soon turned towards the right in his political views, "reappearing several years later as the secretary of Germany's most influential and fashionable right-wing political club, the "Herren-klub," (Laqueur, *Young Germany*, 103), and writing for Rightist periodicals such as *Ring* and *Deutsches Volkstum*. (Schenk, *Die Freideutsche Jugend*, 122, 307). Oswald Spengler was also a member of the Herrenklub. See Anton Kies, Martin Jay, Edward Dimendberg, eds., *The Weimar Republic Sourcebook* (Berkeley: University of California Press, 1994), 330. There was an F. Vorwerk operating a publishing house in Stuttgart after the Second World War who published works on the German Right. See, e.g., Armin Mohler, *Die konservative Revolution in Deutschland* (Stuttgart: F. Vorwerk, 1950).

101. Botar, "An Activist-Expressionist in Exile," 78 and Rolf Sachsse, *Lucia Moholy* (Düsseldorf: Edition Marzona, 1985), 7 and "Lucia Moholy" in Rainer Wick, ed., *Das neue Sehen*, 1991: 94. But note that in *Lucia Moholy* (1996), Sachsse revises this idea and states that "Insofern bleiben alle Verweise auf eine Beeinflussung durch der Prager Schule der Philosophie, die sie selbst in Gesprächen gern genährt hat, reine Spekulation." (p. 11)

102. On Schulz and Vorwerk at Barkenhof, see Botar, "An Activist-Expressionist in Exile," 78.

On Vogeler's nature mysticism, see Bernd Stenzig's After-

word to Walter Hundt, *Bei Heinrich Vogeler in Worpswede. Erinnerungen* (Fischerhude: Worpsweder Verlag, 1981), 208-210 and Stenzig, "'Von eines Auferstehenden,'" 127. On Kropotkin's importance at Barkenhoff, see Hundt, *Bei Heinrich Vogeler in Worpswede*, 67. On Kropotkin as a nature-centric, ecological anarchist, see Bramwell, *Ecology in the Twentieth Century*, 70-71. That Vogeler was an Anarchist in 1919, heavily influenced by the ideas of Kropotkin, rather than the Communist he later remembered himself as being; i.e. that Kropotkin, rather than Marx, was the most important ideological influence on the commune, is repeatedly stated in the literature. See, e.g., Ulrich Linse, *Die Kommune der deutschen Jugendbewegung* (Munich: C.H. Beck'sche Verlagsbuchhandlung, 1973), 52; Bernd Stenzig, "'Von einer Auferstehenden,'" 127 and Heinrich Wiegand Petzet, *Von Worpswede nach Moskau. Heinrich Vogeler. Ein Künstler zwischen den Zeiten* (Schauberg: DuMont Verlag, 1972), 127-28. Petzet emphasizes this influence and that of Tolstoy and Bakunin, during the commune period of Barkenhoff (1918-1922). He also points out that Vogeler does not mention these names in his memoirs *Werden, Erinnerungen* because of the contemporary pressures of Stalinism. See also Vogeler's portrait of Kropotkin, the frontispiece for the German edition of Kropotkin's *Landwirtschaft, Industrie und Handwerk* (Berlin: Verlag "Der Syndikalist", 1921). The copy I have seen of this book was in the library of Mies van der Rohe, now deposited in the Department of Special Collections of the Library of the University of Illinois at Chicago. On Vogeler as a religious-anarchist artist, see Ulrich Linse, *Barfüssige Propheten. Erlöser der zwanziger Jahre* (Berlin: Siedler Verlag, 1983), 130. See also Ulrich Linse, *Entschiedene Jugend, 1919-1921* (Frankfurt/Main: dipa, 1981), 135, 183, 191-2, 221 and David Erlay, *Heinrich Vogeler. Ein Maler und seine Zeit* (Fischerhude: Verlag Atelier im Bauernhaus, 1981).

103. Ulrich Linse, *Zurück, o Mensch, zur Mutter Erde: Landkommunen in Deutschland 1890-1933* (Munich: DTV, 1983), 20. Hepp sees this period around the time of the great inflation (1923-24) as the high-watermark of the communard movement. *Avantgarde*, 82.

104. On Landauer and on Kropotkin and Germany, see Linse, *Ökopax und Anarchie*, 77ff. Kropotkin's book was published in London in 1902 as *Mutual Aid as a Law of Nature and a Factor of Evolution*. On Landauer's importance to Activism, see Whyte, *Bruno Taut*. On his death in Munich in 1919, see George Woodcock, *Anarchism: A History of Libertarian Ideas and Movements* (New York: Meridian Books, 1962), 432.

105. Vogeler, quoted in Erlay, *Vogeler*, 182.

106. Neubau appeared in June 1919. Sachsse in *Lucia Moholy* (1985), 8-9. Her use of this male alias is less likely because she was a woman, as Sachsse suggests, than because she was a foreign national engaging in radical activities during a period when police raids on the Barkenhoff commune were commonplace. (See David Erelay, *Vogeler*, 176-181.) On the complicated and contradictory status of women in the German Youth Movement, see Elisabeth Büsse-Wilson, *Die Frau und die Jugendbewegung. Ein Beitrag zur weiblichen Charakterologie und zur Kritik des Anti-feminismus* (1920) (Münster: Lit, 1989); Irmgard Klonne, *"Ich spring' in diesem Ringe" Mädchen und Frauen in der Deutschen Jugendbewegung* (Pfaffenweiler: Centaurus-Verlagsgesellschaft, 1990); and Marion E. P. de Ras, *Körper, Eros und weibliche Kultur. Mädchen im Wandervogel und in der Bündischen Jugend, 1900-1933* (Pfaffenweiler: Centaurus-Verlagsgesellschaft, 1988).

107. On Fuhrmann as politically anarchist, see Gert Mattenklott, Vorwort in: Ernst Fuhrmann, *Neue Wege*, The collected works volume 10. (Hamburg: Ernst Fuhrmann Archiv, 1983), V, VIII.

108. For a summary of Fuhrmann's unsystematic, biologicistic and poetic philosophy, see Volker Kahmen, "Ernst Fuhrmann - - Photographs of Plants" in *Ernst Fuhrmann* (Rolandseck: Bahnhof Rolandseck, 1979). Fuhrmann's writings were not published for the most part until the 1930s and after, and so he was not as well known as von Uexküll or Francé were. Still, the list of the "Gesellschaft der Freunde Ernst Fuhrmanns" founded in 1931 to aid the publication of his writings included, in addition to artists such as Emil Nolde and Edvard Munch, and writers such as Alfred Döblin and Karl Wolfskehl, no less a figure of biocentric thinking than Hans Prinzhorn. See: Hugo Hertwig, "Revolutionär des Geistes," typescript in Mappe 12 of the Fuhrmann-Archiv of the Staats- und Universitäts-Bibliothek Hamburg. Fuhrmann was familiar with Francé's conception of *Biotechnik*: "Wie Francé richtig sagte, gibt es in der kompliziertesten Industrie keinen Vorgang, der nicht längst im Menschen- und Tierleben oder in den Pflanzen ohne Unterbrechung in Betrieb wäre." Fuhrmann, *Der Sinn im Gegenstand* (Munich: Georg Müller, 1923), 29. See Wolfgang Kemp, *Theorie der Fotografie II, 1912-1945* (Munich: Schirmer/Mosel, 1979), 21, 36, no. 31. On *Biotechnik*, see Chapter Four.

109. Franz Jung, Nachwort in: Ernst Fuhrmann, *Grundformen des Lebens* (Heidelberg: Lambert Schneider, 1962), 251-52. On Vogeler and Dehmel, see Hundt, *Bei Heinrich Vogeler in Worpswede*, 13, 38. On page 163 we note that Dehmel's daughter Liselotte spent time at Barkenhoff. On further connections between Liselotte and Ursula Dehmel and Barkenhoff, see Vogeler, *Werden, Erinnerungen*. On Fuhrmann and Dehmel, see Hugo Hertwig, "Der grosse Einzelne: Ernst Fuhrmann," typescript in

Mappe 12 of the Fuhrmann-Archiv of the Staats- und Universitäts-Bibliothek Hamburg; Kahmen, "Ernst Fuhrmann -- Photographer of Plants," unpag.; Jung, Nachwort, *Grundformen des Lebens*, 251, and Mattenklott, Vorwort in: Fuhrmann, *Neue Wege*, V. Mattenklott notes that Ida Coblenz, Richard Dehmel's later wife, was Fuhrmann's wife at the time.

110. Cited by Mattenklott's Vorwort in: Fuhrmann, *Neue Wege*, III.

111. Fuhrmann had known Osthaus since 1915. See Mattenklott, Vorwort in: Fuhrmann, *Neue Wege*, V. Kahmen gives the 1920 date in: *Ernst Fuhrmann*, 8. For the more credible 1919 date see: *Karl Ernst Osthaus. Leben und Werk* (Rechlinghausen: Verlag Aurel Bongers, 1971), 98. A document quoted on p. 228 proves that Fuhrmann was director of the Folkwang-Museum by 14 January 1920. According to this publication Osthaus and Fuhrmann probably met through Professor Botho Graef in Jena. (p. 98)

Vogeler's relationship with Osthaus and his family was close. In the summer of 1920 Osthaus' son Eberhard moved to Barkenhoff and joined the commune, in preparation for the founding of the Osthaus' own "Osthaus-Siedlung" at Hohenhagen near Hagen. (See Hundt, *Bei Heinrich Vogeler in Worpswede*, 89-90.) The elder Osthaus died in 1921, after which the museum moved from Hagen to Essen. Later Mrs. Osthaus had a house built which was designed by Vogeler and decorated by Barkenhoff artists. (p. 90) Henry van de Velde had designed the main house, "Hohenhof," built in 1907-8. Van de Velde, *Geschichte meines Lebens*, 282-4.

112. Fuhrmann, *Der Sinn im Gegenstand*, 20.

113. Fuhrmann, *Der Sinn im Gegenstand*, 2. This book was owned by Mies van der Rohe. (Mies van der Rohe Archive, Special Collections, University of Illinois at Chicago)

114. Schulz, "Symbole." See also: Sachsse, *Lucia Moholy* (1985), 8. For evidence of Klagesian ideas in Fuhrmann's *Biosophie*, see his discussion of the rythmn of breath as "das höchste Prinzip des Lebens," in *Der Sinn im Gegenstand*, 18.

115. In: László Moholy-Nagy, *Malerei, Photographie, Film* (Munich: Albert Langen Verlag, 1925). Renger-Patzsch was Fuhrmann's employee at the Folkwang-Auriga Verlag between 1922 and 1925. It is safe to presume that Renger-Patzsch's Monistic imaging of the world, his biocentric representation of plants "as living beings," and of technology as analogous to the natural world, was indebted to Fuhrmann's *Biosophie*. Note the Monist overtones in Renger-Patzsch's *Die Welt ist schön* (Munich: Kurt Wolff, 1928). This Monism is suggested by the sequencing and grouping of the photographs which imply that there is beauty to be found in all of nature, artifact and

not. For contemporary biocentric readings of Renger-Patzsch's work, see Carl Georg Heise's Introduction to Renger-Patzsch, *Die Welt ist schön*; Ernő Kállai's review of it in *bauhaus* 3, no. 2 (April-June 1929), 27; and especially Willy Rietzler's review in *Die Form* (4 November 1924): 24. Renger-Patzsch maintained contact with biocentric thinkers of both the Left and Right such as Hermann Hesse and Ernst Jünger. On this, see Donald Kuspit, "Albert Renger-Patzsch," in: Renger-Patzsch, *Joy Before the Object* (San Francisco: Aperture, 1993), 6-7. On the importance of Fuhrmann to Renger-Patzsch's development, see Ann and Jürgen Wilde, *Albert Renger-Patzsch: Ruhrgebiet Landschaften*, 170, and Mattenklott, Vorwort, *Neue Wege*, VI. Ingeborg Güssow has pointed out that the book's signet, representing a branching tree juxtaposed with a high-tension power stack signals his intention to analogize nature and technology, seeing the latter as a subset of the former. "Die neusachliche Photographie" in: Helmut Friedel, ed., *Kunst und Technik den 20er Jahren: Neue Sachlichkeit und Gegenständlicher Konstruktivismus* (Munich: Lenbachhaus, 1980), 100-01.

It would have been Fuhrmann who was responsible (after Osthaus' death) for the Folkwang-Museum's extremely early purchase in 1922 of four "farbige Zeichnungen" from Moholy-Nagy. (See Walter Erben in: Karl Ernst Osthaus. *Leben und Werk*. Recklinghausen: Aurel Bongers, 1971, 217.) Also, the Moholy-Nagys owned books by Fuhrmann. See the postcard from Lucia Moholy to Hannah Höch written from Dessau on 7.6.1926 asking Höch to send the "Fuhrmann-Bücher" which they had "vergessen," published in *Hannah Höch: Eine Lebenscollage* volume 2 (Berlin: Berlinische Galerie and Stuttgart: Gerd Hatje, 1995), 258-9.

It was only in 1925, the year Moholy's *Malerei, Photographie, Film* was published, that Renger-Patzsch began work as an independent photographer, that his first book of photographs *Das Chorgestühl von Cappenberg* was published, and that he had his first exhibition, at his new home of Bad Harzburg. For these biographical details, and for a discussion of the relationship between Moholy and Renger-Patzsch, see Fritz Kempe, "Albert Renger-Patzsch, Mensch und Werk," in *Albert Renger-Patzsch. Der Fotograf der Dinge* (Essen: Ruhrland- und Heimatmuseum Essen, 1967), unpag. Even if Moholy did not encounter it through Fuhrmann, it is possible that he first saw Renger-Patzsch's work in his earliest publication in *Deutsche Camera-Almanach*: "Pflanzenaufnahmen," (volume 14, 1924: 49-53).

116. On the fighting, see Erlay, *Worpswede - Bremen - Moskau*, 102.

117. Vogeler, *Werden. Erinnerungen*, 230, also: 277.

118. Sachsse, *Lucia Moholy* (1985), 8-9. For a reproduction of the completed monument, see Erlay, *Vogeler*, 204. The monument, designed by Bernhard Hoetger (the Worpswede artist who had

produced Paula Modersohn-Becker's memorial), was eventually built, and was later destroyed by the National Socialists. Note that Albert Steffen, Vogeler's friend and the man after whom Lucia presumably coined her pseudonym, was a friend of Rudolf Steiner's. See Petzet, *Von Worpswede nach Moskau*, 164.

119. Moholy-Nagy's political sympathies of the teens and twenties is a controversial topic, some scholars overemphasizing his commitment to Communism, others eliding it. I know of no evidence that Moholy ever joined the Communist Party and he himself denied having been the member of any political party. See his letter to Emily Taft-Douglas (21 November 1945) in: Oliver Botar, ed., "László Moholy-Nagy and Hungarian-American Politics II," *Hungarian Studies Review* 21, no. 1-2 (Spring-Fall, 1994): 99 and Allan C. Greenberg, *Artists and Revolution: Dada and the Bauhaus 1917-1925* (Ann Arbor: UMI Research Press, 1979), 175.

Many of his closest friends were Communist, however. One of his best friends was the Communist Hungarian playwright Lajos Barta, and soon after Moholy's arrival in Berlin he was friendly with the Spartacist members of the Malik-Verlag circle. Moholy's sympathy with the Spartacists is clear from his description of the Kapp-Putzsch in his letter to Iván Hevesy of 5 April 1920, in Krisztina Passuth, *Moholy-Nagy*, (London: Thames and Hudson, 1985), 388. On Moholy, Barta and the Malik-Verlag circle, see Botar, "An Activist-Expressionist in Exile," 79.

Moholy's Communist sympathies are documented by his portraits. His likeness of Baron Lajos Hatvany, the Social Democratic financial backer of Hungarian avant-garde literature, probably executed during Moholy's first stay in Vienna in 1919, is dedicated to the Communist journalist László (Laci) Tölgy, former assistant editor of *Vörös Újság* [Red Journal], the first Communist newspaper in Hungary. (For a reproduction, see Passuth, *Moholy-Nagy*, figure 12.) While this picture is usually assumed to have been executed before Moholy left Budapest in early August 1919, I believe it to be a product of Moholy's first Viennese stay during the fall of 1919. My reasons are (1). Both Hatvany and Tölgy were in Vienna at the time and the poverty experienced by all the émigrés -- including Baron Hatvany -- would have had a levelling effect giving Moholy easier access to the Baron than in Budapest. (2). As Moholy-Nagy's nephew Levente Nagy has pointed out Moholy typically employed the dash between the two components of his name only in emigration. {"Képek aláírása Magyarországon a kezdettől 1919 novemberéig" [The signature of works in Hungary from the start to November of 1919], September 1985, typescript in the archive of Hattula Moholy-Nagy, Ann Arbor, Michigan.} While Nagy cites this portrait of Hatvany as the exception, I think it is simpler to date this work to Moholy's Viennese stay.) On László Tölgy leaving Budapest for Vienna before December of 1919, see *Tanuságtevők. Vissza-*

emlékezések a magyarországi munkásmozgalom történetéből, 1919-1933 [Bearers of witness: Memories from the history of the Hungarian working class movement] (Budapest: Kossuth, 1981), 38. Among Tölgy's aliases were: László Fekete, László Glück (his original name?) and Peter Koester. Moholy may have known Tölgy from his own days in the Budapest Galileo Circle where, like so many others of their generation, Tölgy was educated politically. (Robert Whelen, *Robert Capa. A Biography*, New York: Ballantine, 1985, 42) On 15 January 1920 Tölgy was expelled from the Hungarian Journalists' Association for his political involvement during the Hungarian Soviet of 1919. (Ágnes Szabó and Róbert Vértes, eds., *Negyedszázados harc* [Quarter-century struggle], Budapest: Akadémiai Kiadó, 1975, 32) *Vörös Újság* appeared just before and during the Soviet of 1919. (Sándor Ék, *Mába érő tegnapok* [Yesterdays extending into today] [Budapest: Kossuth, 1968], 159; and *Tanuságtevők*, 479.) Note, however, that Tölgy is not mentioned in the section of *Vörös Újság* in Henrik Vass, ed., *Fejezetek a magyar munkásmozgalom történetéből* [Chapters from the history of the Hungarian working class movement] (Budapest: Táncsics, 1975), 101-03.

Most significantly, Moholy's February 1921 portrait of Lipót Katz, a journalist writing for the Viennese Hungarian Communist periodical *Proletár* [Proletarian], the official Hungarian journal of the Third Internationale (published 30 June 1920 to 26 January 1922), bears a dedication to Katz as Moholy's *elvtárs* [comrade]. (Éva Bajkay identifies the sitter as Lipót Katz in Bajkay, *A magyar grafika külföldön. Bécs 1919-1933* [Hungarian graphic art abroad: Vienna 1919-1933] [Budapest: Petőfi Irodalmi Múzeum, 1982], 41. On *Proletár*, see: Szabó and Vértes, *Negyedszázados harc*, 658.)

120. Sachsse, *Lucia Moholy* (1985), 9; and Moholy, *Marginal Notes*, 51. According to Sachsse her exact term of employment with Saal was from 1 December 1919 to 21 March 1920. Note that the bookshop was due to move to Lauenburg an der Elbe from Hamburg on 1 July 1920, so she may have left her employment in anticipation of the move. See Messer, *Die freideutsche Jugendbewegung*, 99.

121. Schenk, *Freideutsche Jugend*, 91; Messer, *Die Freideutsche Jugendbewegung*, 42; Kindt, *Die Wandervogelzeit*, 573-74, 1065-66.

122. Joachim Büchner, "Originalfotos aus Worpswede," in Büchner, ed., *Kurt Schwitters 1887-1948* (exh. cat.) (Frankfurt/Main and Berlin: Propyläen Verlag, 1987), 284 and Robert Kain, "Kurt Schwitters in Bremen und Worpswede" in: *Kurt Schwitters 1887-1948. Der Künstler von MERZ* (Bremen: Kunsthandel Wolfgang Werner, 1989), unpag. See note 84. For a list of publications by Spengemann see "Der Steegemann Verlag" in: *Schwitters-Archiv Hannover. Bestandsverzeichnis 1986* (Hannover: Stadtbibliothek Hannover, 1986), 225-33. The document of Schwitters'

respect for Bäumer and Martha Vogeler is his collage *Das Bäumerbild* of 1920, in which fragments of a printed discussion of the post-war peace process are combined with images of Bäumer and Martha. See Dorothea Dietrich, *The Collages of Kurt Schwitters* (Cambridge: Cambridge University Press, 1993), 115-6.

123. Indeed Barkenhoff enjoyed the occasional support of the Quakers, and as thanks, Vogeler wrote them an essay entitled "Friede." The references to Quaker support occur throughout the Barkenhoff and Vogeler literature. On Vogeler's "Friede," see Petzet, *Von Worpswede nach Moskau*, 124.

124. János Brendel has pointed to Monist founder Wilhelm Ostwald's effect on Moholy's thinking after his arrival in Berlin in 1920. János Brendel, "Der deutsche Einfluss von Scheerbart und Wilhelm Ostwald auf die ungarische Konstruktivistentheorie," in Hubertus Gassner, ed., *Wechselwirkungen: Ungarische Avantgarde in der weimarer Republik* (Marburg: Jonas, 1986), 173-8.

125. Sibyl Moholy-Nagy, *Experiment in Totality*, 21.

126. Veit Loers, "Moholy-Nagys 'Raum und Gegenwart' und die Utopie vom dynamisch-konstruktiven Lichtraum" in *László Moholy-Nagy* (Stuttgart: Gerd Hatje, 1991), 41.

127. Because of his pedagogical endeavors and his efforts to effect a synthesis of science and spirituality, Steiner would have interested them to a greater degree. Loers' article, so valuable in other ways, has had the unfortunate effect of suggesting to some that Moholy-Nagy was somehow an "occult" artist influenced by Theosophy and Anthroposophy, and that "der 'psycho-biologischen Reform' ... eine Synthese zwischen naturwissenschaftlicher Forschung und Vorstellungen der persischen Mazdaznan-Lehre [bildet]." Roland Günter, "Der Industrialisierungs-Prozess und das Experiment der beiden Moholy-Nagys" in Gottfried Jäger and Gudrun Wessing, eds., *Über Moholy-Nagy: Ergebnisse aus dem Internationalen László Moholy-Nagy Symposium, Bielefeld 1995, zum 100. Geburtstag des Künstlers und Bauhauslehrers* (Bielefeld: Kerber Verlag, 1997), 125-6.

128. While no exact information has as yet come to light concerning the time of Hausmann's or Behne's first meetings with Moholy-Nagy, Hausmann's may have been as early as September of 1920, when Moholy's close friend Lajos Barta's play *Russlands Tag* was produced by Erwin Piscator's Proletarian Theatre in Berlin. As Hausmann was connected to the Malik-Verlag circle of which Piscator and his theatre were a part, Moholy may have encountered Hausmann there. (On this, see Botar, "An Activist-Expressionist in Exile," 82.) Had he not done so earlier, Moholy would certainly have met Hausmann in 1921 through his good friend Hannah Höch, and indeed, El Liss-

itzky remembers meeting Hausmann in the Moholy-Nagys' studio in "im Jahre 1921/1922, als ich nach Berlin kam," which would place such a meeting to about early 1921. (Lissitzky-Küppers, *El Lissitzky*, 64) The earliest document I know of concerning their contact is the "Aufruf zur elementaren Kunst," dated October 1921 and signed by Moholy-Nagy, Hausmann, Ivan Puni and Hans Arp. (*De Stijl* 4 no. 10, 1921) Moholy-Nagy and Hausmann would not only have had their interests in common, but Hausmann's origins as well: like Moholy-Nagy, Hausmann was Austro-Hungarian. Though born in Vienna, and raised in Vienna and Berlin, Hausmann's father Viktor was Hungarian by birth. Hausmann was a Czecho-Slovak citizen from after the First World War until 1946 (when this nationality was taken away from him due presumably to his Germanic ethnicity), probably because his father was born in northern Hungary, the part which became Slovakia. He himself claimed Czech, Slovak and Italian heritage, as well as Alsatian origins for his family. Broido-Cohn cited him as having been one-eighth Jewish, and therefore not in danger due to his origins in Nazi Germany. Züchner, ed., *Der Deutsche Spiesser argert sich*, 280, interview with Broido-Cohn, 106, and Bartomeu Mari, "Keine Utopie: Ein ungefähres Portrait des Dadasophen," in Züchner, ed., 126.

While Moholy might have met Behne through his involvement with Arthur Segal's social circle as early as mid-1920, there are no exact data to confirm this. As Hausmann and Behne knew each other, furthermore, he might have encountered the art historian through Hausmann during the course of 1921. In any case, the earliest document I am aware of concerning Moholy's and Behne's friendship dates from December 1922, when Moholy-Nagy dedicated a watercolour to Behne: "Für Dr. Behne's Weihnachten 1922." (The transparency of this work is in Hattula Moholy-Nagy's archive, Ann Arbor.)

129. Moholy-Nagy, *Vom Material zu Architektur*, 16.

130. This awareness is particularly evident in the introduction to the second edition of *Experiment in Totality*, with its use of Francé's terms such as "Bios" and "Biotechnik," xvii-xviii.

131. Robert Bud, *The Uses of Life: A History of Biotechnology*. (Cambridge: Cambridge University Press, 1993), 61.

132. Haeckel, *The Riddle of the Universe*, 342.

133. Heinrich Vogeler, "Frühlingsbrief an meine Freunde!" p. 8 in *Der Einbruch 1. Rundbrief der Eintschiedenen Jugend Deutschlands*. in Linse, *Entschiedene Jugend*, 191.

134. Quoted in: Sibyl Moholy-Nagy, *Experiment in Totality*, 44-5.

135. On Bruderhof and the Student Christian Movement, see Bramwell, *Ecology in the 20th Century*, 99. On Quaker communes, see Linse, *Zurück o Mensch*.

136. Quoted in Sachsse, *Lucia Moholy* (1995), 108. Both Vogeler's and Moholy's texts may have been referring to Novalis' statement that "away from the rhythm of the world, one is away from the world itself." Quoted in Schall, "Rhythm and Art in Germany," 34.

137. On Lucia's job ending July 31 1921, see Sachsse, *Lucia Moholy* (1985), 9. 137. Kállai remembers that they were produced on vacation in "Technika és konstruktív művészet" [Technology and constructive art] *Ma* 7, no. 5-6 (1 May 1922): 7-9. Though we do not know its exact date the vacation must have taken place in 1921, the approximate date of the *Ackerfelderbilder*.

138. László Moholy-Nagy, *Abstract of an Artist* (New York: Wittenborn, Schultz, Inc., 1949), 72.

139. On the Moholys' July 1922 vacation at Weyhers, see László's letter to Theo van Doesburg of 10 July 1922, in: the Appendix to Theo van Doesburg, *Grondbegrippen van de nieuwe beeldende kunst* (Nijmegen: SUN, 1983), 102. The school was based on the teachings of Goethe and Rudolf Steiner. See: Helmut Günther, "Geschichtlicher Abriss der deutschen Rhythusbewegung," in Eva Bannmüller & Peter Röhthig, eds., *Grundlagen und Perspektiven ästhetischer und rhythmischer Bewegungserziehung* (Stuttgart: Klett, 1990), 45-6. It comes as no surprise that it is now the "Rudolf Steiner Schule Loheland." See: "World List of Rudolf Steiner Waldorf Schools" in: *Journal for Rudolf Steiner Waldorf Education* 29, no. 2 (July 1995): 43. Information courtesy of Pierre de la Ruffinière du Prey.

140. See Hundt, *Bei Heinrich Vogeler in Worpswede*, 104. Vogeler wrote: "Gestern tanzten die Biebersteiner (Loheländer) wieder in Bremen, unsere Leute waren nicht sehr davon angetan. Rohden und Langgaard, waren draussen bei uns und scheinbar sehr angetan von dieser aus dem Chaos gestaltenden neuen Welt." [i.e. Barkenhoff] No precise date is given, though it might have been as late as 1921. Note that Karl Ernst Osthaus invited Langgaard and von Rohden (who were teaching at Bieberstein) to his school to teach rhythmic gymnastics as early as 1916. *Karl Ernst Osthaus. Leben und Werk*, 444.

141. Lucia Moholy, "Erinnerungen von Freunden an ihre Begegnung mit Elisabeth Vogler...", in Sachsse, *Lucia Moholy* (1995), 108. On Paul Vogler as a *Wandervogel* and *Freideutsche Jugend* activist, see Kindt, ed., *Die Wandervogelzeit*, 599-600, 602, 604, 829-830. On Elisabeth Vogler, see below.

142. Marion de Ras, *Körper, Eros und weibliche Kultur*, 163-169.

143. Lucia Moholy, *Moholy-Nagy, Marginal Notes: Documentary Absurdities* (Krefeld: Scherpe Verlag, 1972), 69.

144. Moholy-Nagy, "Photoplastische Reklame," *Offset, Buch und Werbekunst* 7 (1926): 386-8. See also Loers, "Moholy-Nagys 'Raum der Gegenwart'," 41, 50.

145. On the *Kunsterziehungsbewegung* (whose founders were Julius Langbehn and Alfred Lichtwark) and *Reformpädagogie*, see Wolfgang Scheibe, *Die Reformpädagogische Bewegung. Eine einführende Darstellung* (Weinheim: Beltz, 1978), 139-48. On creativity: 142-3.

146. László and Lucia Moholy-Nagy, "Produktion -- Reproduktion" *De Stijl* 5, no. 7 (1922). The translation is adapted by me from the one in Passuth, *Moholy-Nagy*, 289.

147. Haus, quoting Mach from *Die Analyse der Empfindungen und das Verhältniss des Physischen* (Jena 1900) in: *Moholy-Nagy: Fotos und Fotogramme*, 59.

148. Andreas Haus, "Sinnlichkeit und Industrie," in Stanislaus Von Moos, ed., *Avant Garde und Industrie* (Delft: Delft University Press, 1983), 108-109. Haus refers to Robert Müller-Freienfels, *Psychologie der Kunst*. Second edition. Vol. 1 (Leipzig and Berlin, 1922), 21ff. On *Empirioskritizismus*: Haus, *Moholy-Nagy: Fotos und Fotogramme*, 58ff. On Müller-Freienfels, see also: Hans Prinzhorn, *Leib-Seele-Einheit: Ein Kernproblem der neuen Psychologie* (Potsdam: Müller & Kiepenheuer / Zürich: Orell Füssli, 1927), 142, 195-6.

149. Haus, *Moholy-Nagy: Fotos und Fotogramme*, 60ff. On Marcus and Behne (my addition to the list) see above. Another possible source is Raoul Francé, whose writings -- based on the psychovitalist/psychobiological theory of perception of Gustav Fechner, Mach and Avenarius -- László Moholy-Nagy might have had access to. We have documentary evidence of Moholy's awareness of Francé only when Moholy was at the Bauhaus after April 1923, however. On Francé's "psychovitalism," see Chapter Two. On Proletkult and the Hungarian avant-garde in exile, see Oliver Botar, "From Avant-Garde to 'Proletcult': Art and Politics in the Hungarian Journals *Egység, Akasztott Ember* and *Ék*, 1922-24," in: Virginia H. Marquardt, ed., *Art on the Political Front: Political Journals and Art, 1910-1940*, (University of Florida Press, 1997). On Marcus and Hausmann, see Züchner, ed., *Der Deutsche Spiesser Ärgert sich*, 22, 24-7.

150. Haus details the process by which Mach and Avenarius' ideas were dispersed in *fin-de-siècle* Germany through the pages of the art journal *Kunstwart*. Haus, *Moholy-Nagy: Fotos und Fotogramme*, 59. On art education reform, see Hans M. Wingler, ed., *Kunstschulreform 1900-1933* (Berlin: Gebr. Mann, 1977).
151. In 1919, e.g., Saal published Fritz Jöde, ed., *Pädagogik des Wesens, Gedanken zur Erneuerung des Wendekreises* (Hamburg: Freideutscher Jugendverlag Adolf Saal, 1919) [an anthology of the Wende-Kreis]; Friedrich Schlunz, *Die Entfesselung der Seele, Absage an die vorrevolutionäre Gesellschaft und ihr Bildungswesen* (Hamburg: Freideutscher Jugendverlag Adolf Saal, 1919). See Linse, *Die Entschiedene Jugend 1919-1923*, 351; 137.
152. About the Barkenhoff School and its forced closure in 1921, see "Die Worpsweder Arbeitsschule geschlossen," in *Die politische Entscheidung der Entschiedenen Jugend*, Heinz Klute and Fritz Weiss, eds., no. 61-62 (December 1921), no author. The document is reprinted in Linse, *Entschiedener Jugend*, 221.
153. On this Bund, see Scheibe, *Die Reformpädagogische Bewegung*, 208, 318-320 and Linse, *Die Entschiedene Jugend*.
154. On Vogeler as a delegate: Joachim Priewe, *Chronology, Vogeler, Werden, Erinnerungen*, 521 and Bernd Stenzig, "Von einem Auferstehenden," 112. The meeting, "Arbeiterschule und Menschentum," took place Oct. 2-6. See: Vogeler, *Werden, Erinnerungen*, 522. See also Preuss, *Verlorene Söhne des Bürgertums*, 211. Curiously this meeting is not discussed by Linse in *Entschiedene Jugend*, though the importance of Gustav Wyneken to the *Entschiedene Jugend* is. That László established, or that Lucia maintained contact with Vogeler is suggested by László's 1924 report that his works were exhibited at Worpswede. See: László Moholy-Nagy, answer to Andor Németh's questionnaire, 1924, compiled by Júlia Szabó, in: Chapp, ed., *László Moholy-Nagy: From Budapest to Berlin 1914-1923*, 103.
155. On Harmsen: Kindt, ed., *Die deutsche Jugendbewegung*, 1767. In 1916, Kállai reviewed an article by the German biological determinist pedagogical psychologist Wilhelm Hartnacke, in which Hartnacke propounded social biological views on the education of gifted children. Kállai's review of Hartnacke's article "Das Problem der Auslese der Tüchtigen. Einige Gedanken und Vorschläge zur Organisation des Schulwesens nach der Kriege," in *Zeitschrift für paedagogische Psychologie und experimentelle Paedagogie*, nos. 11 and 12 (1915): "Tehetéges tanulók kiválasztása" [The selection of gifted students], *Magyar Pedagógia* [Hungarian Pedagogy] (1916): 270-5. Hartnacke's article also appeared as a booklet (Leipzig: Quelle & Meyer, 1915). For a clearer expression of Hartnacke's biological determinist views, see also his *Organische Schulgestalt-*

ung. Gedanken über Schulorganisation im Lichte der neuen Begabtenforschung, text of a talk given on 23 July 1925 in Danzig. (Radebeul-Dresden: Kupkh & Dietze, 1925). Other pedagogical publications by Kállai: "Esztétikai műveltség" [Aesthetic education], *Paedagógiumi Lapok* [Pedagogical papers] 9, no. 3 (November 1912): 2-5; 9, no. 4 (December 1912): 8-9; "Az izlés nevelése" [The education of taste], *A Sátoraljaaújhelyi Államilag és Városilag Segélyezett Nyilvános Polgári Főiskola Értesítője az 1913-14. Iskola Évről*. [Sátoraljaújhely Public High School newsletter] Vol. 8: 3-11. Evidence of Kállai's *reformpädagogisch* interest in Germany is contained in his review of an exhibition of German and Japanese children's art: "Német és Japán gyerekek" [German and Japanese children], *Magyar Paedagógia* [Hungarian pedagogy] no. 1-6 (1925): 37-44 [dated "May 1922"].

156. See "Die Worpssweder Arbeitsschule geschlossen." Educated as a theologian, Wyneken, the inventor of the term *Jugendkultur*, trained with the pioneer *Reformpädagoge* Hermann Lietz at his school at Ilsenburg. Wyneken founded his own "Freie Schulgemeinde Wickersdorf" in 1906, a model for later *Reformpädagogie*. On Lietz and Wyneken, see Scheibe, *Die Reformpädagogische Bewegung*, 111-14. On Wyneken and the Wende-Kreis of Hamburg, see Linse, *Entschiedene Jugend*, 29ff, 34ff, 137. On Wyneken's important speech at the Hohe Meissner on *Jugendkultur*, and on his significance for the Youth Movement in general, see Hepp, *Avantgarde*, 38-41 and de Ras, *Körper, Eros und weibliche Kultur*, 31-2. On Wyneken and Bruno Taut, and on Wyneken's pedagogy and his school at Wickersdorf, see Whyte, *Bruno Taut*, 171-3. On Wyneken's correspondence with Gropius and his lecture at the Bauhaus in 1920, see Schall, "Rhythm and Art in Germany," 283-84. On Moholy-Nagy's acknowledgement of Wyneken's influence, see below.

157. On Elisabeth Vogler and Wyneken, see Linse, *Zurück o Mensch*, 160. Vogler and her students were at Loheland in 1919-1920 (the first academic year). See Linse, *Zurück o Mensch*, 159 and Marie Buchhold, "Frankenfeld, Schicksal einer Jugendsiedlung," in Werner Kindt, ed., *Die deutsche Jugendbewegung*, 1606. Lucia remembers being at Schwarzerden in the summer of 1922 already, before the commune was established, but when the women were living together there. Sachsse, *Lucia Moholy* (1985), 11; Sachsse, *Lucia Moholy* (1995), 108. See also Loers, "Moholy-Nagys 'Raum der Gegenwart'," 50. Subsequently, Lucia and Elisabeth became close friends and László designed Paul Vogler's clinic in Berlin in 1928. On her friendship with Elisabeth Vogler, see Lucia Moholy in Sachsse, *Lucia Moholy* (1995), 108. See also Lucia's 1927 photographs of Elisabeth Vogler in Sachsse, *Lucia Moholy* (1995), 125, and of the Paul Vogler project in Sachsse, *Lucia Moholy* (1985), 164-5. Sibyl Moholy-Nagy also maintained contact with Paul Vogler, sending her daughter Claudia to his clinic for treatment in 1955.

(Information courtesy of Hattula Moholy-Nagy.)

158. Laqueur, *Young Germany*, 120; Schenk, *Die Freideutsche Jugend*, 333; Loers, "Moholy-Nagys 'Raum der Gegenwart'," 41. Like Lucia, Buchhold had published writings in the journal *Freideutsche Jugend*. On Buchhold and her Socialism influenced by Eastern and Russian mysticism, see also Schenk, *Freideutsche Jugend*, 193, 195, 200-201.

159. Sachsse, (*Lucia Moholy* {1985}, 11) reports this as "Gut Schwarzenerde" as opposed to Laqueur's "Schwarzerde" but surely this is the identical commune. The proper spelling according to the relevant map is "Schwarzerden." See Marion E. P. de Ras, *Körper, Eros und weibliche Kultur*, 159-161. 1926 is indicated by the fact that of 1924 and 1926, 1926 is the year Moholy-Nagy was at Dessau, as he is remembered in de Ras, and in 1924 he was busy working on the manuscript for *Painting, Photography, Film*. Compare the Hamburg teacher Paule Domke, who spent all her vacations at Schwarzerden. (Linse, *Zurück O Mensch*, 174) On Gropius and Ise Frank's vacation after 19 August 1923, see Reginald Isaacs, *Gropius: An Illustrated Biography of the Creator of the Bauhaus* (Boston: Little, Brown & Co., 1991), 108.

160. De Ras, *Körper, Eros, und weibliche Kultur*, 160 and Linse, *Zurück o Mensch*, 159. The courses seem to have been limited to the participation of women, but men were encouraged to visit. (Linse, *Zurück o Mensch*, 159) Elisabeth Vogler remembers the following concerning the summer courses: "Da waren junge Künstler und Pädagogen, vom Bauhaus in Dessau unsere Freunde Ladislav und Lucia Moholy-Nagy, freideutsche Studenten verbrachten ihre Ferien bei uns. Arzt und Ärztin Paul und Paula Vogler und später Fritz Klatt und Ernst Duis hielten Kurse." Loers notes that the Voglers, Elisabeth's brother and sister-in-law, were Gropius' friends. See: Elisabeth Vogler, "Schwarzerden, ein Neubeginn mit klaren Zielen," in: Werner Kindt, ed., *Die deutsche Jugendbewegung 1920 bis 1933. Die bündische Zeit* (Düsseldorf: Eugen Diederichs Verlag, 1974), 1611.

161. Moholy-Nagy to Van Doesburg, 26 August 1924, in the Appendix to van Doesburg, *Grondbegrippen van de nieuwe beeldende kunst*, 107.

162. Lucia Moholy, "Erinnerungen von Freunden."

163. The gymnastics courses began at the end of 1926, so it may have been that summer that Moholy-Nagy prepared designs for the decoration of the gymnasium. See Christoph Conti, *Abschied von Bürgertum. Alternative Bewegungen in Deutschland von 1890 bis heute* (Hamburg: Rowohlt, 1984), 129. For a reproduction see Loers, "Moholy-Nagys 'Raum der Gegenwart'," 41.

164. The first quotation is in de Ras, *Körper, Eros, und weibliche Kultur*, 162, and is from Buchhold's diary of 11. 10.24. The second is from Linse, *Zurück o Mensch*, 185. On Buchhold's and Vogler's ecological awareness, see Linse, 184-186. On Bachofen, see Bramwell, *Ecology in the 20th Century*, 27.
165. Moholy-Nagy, "Geradlinigkeit des Geistes -- Umwege der Technik," *bauhaus* 1 (1926): 363.
166. In *The New Vision* Moholy refers to "Wende-kreis, Worpsswede, Lietz-Ilsenberg, Wyneken-Wickersdorf, daltonsystem, -- landerziehungsheime, arbeitsschulen, versuchsschulen usw." as the forerunners of his own practice. While he does not name them in this list, the references to Heinrich Vogeler at Worpsswede and to the "versuchsschulen" and "landerziehungsheime" (Lohe-land and Schwarzerden) are clear. Moholy-Nagy, *Von Material zu Architektur* (Munich: Albert Langen, 1929), 17. The preface is dated September 1928. In English: *The New Vision: Fundamentals of Design, Painting, Sculpture, Architecture*. Translated by Daphne M. Hoffmann. (New York: W.W.Norton & Co, 1938), 17. On Hermann Lietz, his Ilsenberg school, Gustav Wyneken, and the *Landerziehungsheime* in general, see Marion de Ras, *Körper, Eros und weibliche Kultur*, 31 and Scheibe, *Die Reformpädagogische Bewegung*, 111-37.
167. On the planned Jacoby book, see Moholy-Nagy's letter to van Doesburg of 26 August 1924 (op. cit., 109); and the *Bauhausbücher* prospectus, which indicated that this (along with the other listed books) was "in preparation." Reprinted in Hans Wingler, ed., *The Bauhaus* (Cambridge Mass.: The Cambridge University Press, 1978), 130-1. The praise is contained in Moholy-Nagy's response to Kállai's article in *i10* 1, no. 6 (June 1927): 234, note; and in Moholy-Nagy, *Von Material zu Architektur*, 15. The *i10* footnote also contains the reference to the planned Jacoby article, as does the footnote on page 156 of *The New Vision* (1938). I am assuming that Moholy, who was photography editor of *i10*, and who knew Jacoby's work, commissioned the article. On the biological bases of Jacoby's thinking, see Moholy's note on p. 156 of *The New Vision* (1938) in which he says that Jacoby article was to be entitled "The common biological basis of all creative work." Moholy writes that "The article was unfortunately never published but the title has been vindicated beyond doubt by Jacoby's previous work." On Jacoby's educational theories as biologically-based, see Heike Le Brün-Hölscher, *Musikerziehung bei Heinrich Jacoby* (Münster: Lit Verlag, 1987), esp. 14ff. 109ff. and 153ff.
168. See de Ras, *Körper, Eros und weibliche Kultur*. Jacoby taught music theory and music at the Dalcroze-Schule in Dresden-Hellerau, from 1913 to 1917 and 1922 to 1924. *Deutsches Biographisches Archiv*. Neue Folge, Fiche no. 643 (Munich: K.G.

Sauer, 1982) and Heinrich Jacoby, *Jenseits von 'Begabt' und 'Unbegabt'* Sophie Ludwig, ed., (Hamburg: Christians Verlag, 1983), 504. The housing settlement of Dresden-Hellerau was the most important German realization of the English "garden city" concept of reformed housing development. It opened in 1909 and it soon became a centre of *Lebensreform*. Emile-Jacques Dalcroze's *Bildungsanstalt* [Training centre] opened in 1912, and became a mecca for experimental dance and rhythmic movement arts, attracted by the presence of Dalcroze and his system of *Körperbildung* and *Ausdruckstanz*. Among others Tut Schlemmer, Ada van der Rohe, Hans Prinzhorn's partners Erna Hoffmann and Mary Wigman, and the founders of Loheland studied or taught here. On Dresden-Hellerau, Kristiana Hartmann, *Deutsche Gartenstadtbewegung: Kulturpolitik und Gesellschaftsreform* (Munich: Heinz Moos, 1976), 46-100; Hepp, *Avantgarde*, 167-71; Inge Baxmann, "Les Rythmes du Moderne" in: Robert Frank, et al., eds., *La Course au Moderne: France et Allemagne dans l'Europe des années vingt, 1919-1933* (Paris: BDIC, 1992), 146-51. On Jacoby and the BES see his *Jenseits von "Begabt" und "Unbegabt"*, 505.

169. Lucia Moholy, *Marginal Notes*, 57. Naturally Jacoby was not the only one to hold the view that "everyone is talented." Johannes Itten, based on his masters (Pestalozzi, Cizek, Montessori), saw everyone as inherently creative. However the specific articulation of Moholy-Nagy's version of this idea seems to derive from Jacoby, and is so credited by László in *Von Material zu Architektur*, 14-15 and its English edition *The New Vision* (1938), 15. (On Itten: Frank Whitford, *Bauhaus* {London: Thames and Hudson, 1984}, 51-4.) Taking up Lucia's cue, Wulf Herzogenrath is one of the few authors to mention Jacoby in his writing on Moholy-Nagy. See: "Laszlo Moholy-Nagy (sic) professeur au Bauhaus" in: *Laszlo Moholy-Nagy (sic)* (Paris: Pompidou, 1976), 119.

The evidence concerning the Moholy-Nagys' personal relationship with Jacoby is sparse but decisive. That Jacoby, as the Moholys, had connections with German Quakers, suggests that they moved in similar circles. (On Jacoby's connections with the Quaker Elisabeth Rotten see *Jenseits von begabt und unbegabt*, 505-06.) The reference in László's letter to van Doesburg of 26 August 1924 concerning a planned Jacoby book in the *Bauhausbücher* series makes it certain that they were in contact by then, as does the planned article for *i10* in 1927 discussed above. Lucia's 1927 portrait series of Jacoby is material evidence of their contact by that date. (Reproduced in Sachsse, *Lucia Moholy* {1995}, 121.) Lucia's letter to Jacoby of 1 October 1947 in which she describes her partner Theodor Neubauer's arrest in 1933, and her subsequent emigration from Germany, implies that Lucia, Neubauer and Jacoby were part of a common circle of friends in Charlottenburg before 1933. (Lucia Moholy papers, Bauhaus-Archiv Berlin. (Thanks to Lloyd Engelbrecht for providing me with a copy of

the letter. It has been published in Sachsse, *Lucia Moholy* {1996}, 81-3. Also: Lucia Moholy, *Marginal Notes*, 57. On Jacoby as resident in Berlin from 1928 to 1933, see Le Brün-Hölscher, *Musikerziehung bei Heinrich Jacoby*, 4.) In a notebook kept on her trip to London during the summer of 1925 Hannah Höch writes "Jacoby Moholy," and then crosses the text out -- an enticing if cryptic (since neither of the Moholys were in London that year) association of the two names. (*Hannah Höch: Eine Lebenscollage*, Vol. 2, 230)

170. Terry Suhre implicitly recognized this Monism when he wrote "Throughout his life Moholy wrote on an amazing variety of subjects ... always emphasizing the inherent unity of all things." Introduction to *Moholy-Nagy: A New Vision for Chicago* (Chicago: University of Illinois Press and the Illinois State Museum, 1991), 10.12.

171. Moholy-Nagy, *Von Material zu Architektur*, 8.

172. Moholy-Nagy, *The New Vision* (1938), 13-14.

173. On this, see Alain Findeli, *Le Bauhaus de Chicago: L'oeuvre pédagogique de László Moholy-Nagy* (Sillery, Qué.: Septentrion, 1995), 177-82. On Dewey and Germany, see Scheibe, *Die Reformpädagogische Bewegung*, 171-210. Moholy-Nagy owned a copy of Dewey's *Art as Experience*, dedicated by the author to him in 1938. (Information courtesy of Hattula Moholy-Nagy.)

174. Gropius, "Program of the Staatlichen Bauhaus in Weimar," in Wingler, ed., *The Bauhaus*, 32. See also Franciscono, *Bauhaus*, 137.

175. Hans Christoph von Tavel, "Johannes Itten: Sein Denken, Wirken und Schaffen am Bauhaus als Gesamtkunstwerk," in *Das frühe Bauhaus und Johannes Itten* (Stuttgart: Gerd Hatje, 1994), 49.

176. Tut Schlemmer, ed., *The Letters and Diaries of Oskar Schlemmer* Krishna Winston, trans. (Evanston: Northwestern University Press, 1990), 53. These two passages were first quoted together by Schall in her "Rhythm and Art In Germany," 353. On esoteric and nature-centric references in Schlemmer's letters and diaries, and on what is in effect Schlemmer and his colleague Lothar Schreyer's biocentrism at the Bauhaus, see Schall, 335-58.

177. Klee, Sixth exercise (Monday 3 July 1922). In: Paul Klee, *Notebooks. Volume 1. The Thinking Eye*. Edited by Jürg Spiller. Translated by Ralph Manheim. (Woodstock, N.Y.: The Overlook Press, 1992), 449.

178. Klee, "Ways of Nature Study," in *The Thinking Eye*, 63, 66.

179. Wassily Kandinsky, "Abstrakte Kunst," *Die Cicerone* 17 (1925): 647.

180. László Moholy-Nagy, *The New Vision* (1938), 11.

181. Wassily Kandinsky in a letter to Gabrielle Münter, quoted in Jelena Hahl-Koch, *Kandinsky* (London: Thames and Hudson, 1993), 178.

182. Wassily Kandinsky, contribution to "Mosaic"; addendum to Charles Sirató, "Manifeste Dimensioniste" *plastique* no. 2 (Summer 1937): insert. This important statement by Kandinsky has been omitted from Kenneth C. Lindsay and Peter Vergo, eds., *Kandinsky, Complete Writings on Art* (New York: Ca Capo Press, 1994).

183. For this standard history, see e.g., Whitford, *Bauhaus*, Chapter 12 and Magdalena Droste, *Bauhaus 1919-1933* (Cologne/Berlin: Benedikt Taschen Verlag/Bauhaus-Archiv, 1990).

184. Franciscono, *Bauhaus*, 239-40. Rykwert, "The Dark Side of the Bauhaus," *The Listener* 80, no.2 (3 October 1968: 436-7.

185. On organic attitudes at the Bauhaus and on the Bauhaus as a synthesis of functionalist and non-functionalist views, see Alain Findeli, "The Bauhaus: Avant-Garde or Tradition?" *The Structurist* 29-30 (1989-90): 56-62 and Schall, "Rhythm and Art in Germany," Chapter V. On Monists such as Haeckel, Ostwald and Mach, and on Driesch at the Bauhaus, see Sarah Lynn Henry, "Paul Klee, Nature, and Modern Science: the 1920s" (Ph.D. dissertation, University of California, Berkeley, 1976), 76-77. See also her "Paul Klee's Pictorial Mechanics from Physics to the Picture Plane," *Pantheon* 47 (1989): 148-9. Henry was the first to point out the importance of the biocentric intellectual discourse to the Bauhaus. Though she of course did not employ this term, indications are that she would accept it. (Personal communication with Henry 1994-5.) For a synopsis of esoteric interests among Bauhaus masters, see Wolf Herzogenrath, *Bauhaus-Utopien: Arbeiten auf Papier* (Stuttgart: Edition Cantz, 1988), 29-30.

186. On concepts of unity as central to Romanticism, see Wiedmann, *Romantic Roots in Modern Art*, 3.

187. Schall has done a lot of work towards such a revision of Bauhaus history, but she has framed it within a discourse on "rhythm" rather than a more specifically *geistesgeschichtlich* one such as I am attempting. Still, Schall's work stands as the most important in this regard. See "Rhythm and Art in

Germany," Chapter V.

188. On this see Philip Steadman, *The Evolution of Designs: Biological Analogy in Architecture and the Applied Arts* (Cambridge: Cambridge University Press, 1979), Chapter 11. On the appearance of the doctrine of functionalism at the Bauhaus in 1923, see Karin Hirdina, "Sull' estetica del funzionalismo nel Bauhaus," *Casabella* 435 (1979): 17.

189. Kállai, "Bioromantik," 272.

190. On Van de Velde as "most consistently of all, aim[ing] at [organic] abstract form" see Robert Schmutzler, *Art Nouveau* (New York: Abrams, 1964), 272. On "Biological Romanticism," see pp. 207-12. On "der Wille van de Veldes zur Vitalisierung der Architektur," see Sebastian Müller, "Ornament als Ausdruck der organischen Panfunktionalität der Natur (van de Velde)" in his *Kunst und Industrie* (Munich: Carl Hanser Verlag, 1974), 61-70. On van de Velde's connections with biocentric and related figures such as Karl Ernst Osthaus, Richard Dehmel, Ricarda Huch, Bruno Taut, Obrist, Endell, etc., see Henry van de Velde, *Geschichte meines Lebens*. Hans Curjel, ed., (Munich: R. Piper, 1962). On his early reading of Kropotkin and Nietzsche, see pp. 80, 190. On his participation in the *Lebensreform* movement through *Kleidungsreform* for women, page 484. On his biocentrism, see Curjel's Afterword. For Lucia Moholy's photographs of Curjel of ca. 1929, see Sachsse, *Lucia Moholy* (1996), 127.

191. Kockerbeck, *Ernst Haeckels "Kunstformen der Natur."* On Endell and the educational reform movement, including Endell's, Obrist's and van de Velde's activity, from which the Bauhaus emerged, see Ekehard Mai, "Von der hohen zur angewandten Kunst: Kunstgewerbebewegung und Reform der Künstlerausbildung um und nach 1900" in Peter Hahn and Christian Wolsdorff, eds., *Bauhaus-Archiv Museum für Gestaltung: Sammlungskatalog* (Berlin: Bauhaus-Archiv, 1981), 259-62. Van de Velde was well aware of Monism and Haeckel's aesthetic project since not only was Haeckel his friend, he was a relation by marriage. See: van de Velde, *Geschichte meines Lebens*, 376. On van de Velde, Obrist, Endell, Gropius and Bruno Taut as forming an oppositional grouping at the Werkbund conference in Cologne in 1914, see *Die Zwanziger Jahre des Deutschen Werkbunds* (Berlin: Werkbund-Archiv/Anabas, 1982), 24-7.

192. On the hiring see Isaacs, *Gropius*, 44, van de Velde, *Geschichte meines Lebens*, 211. Van de Velde certainly saw himself as the *Wegbereiter* of Gropius' Bauhaus. On van de Velde's feelings on the fame of the Bauhaus, see page 428. Van de Velde's letter to Gropius of 11 April 1915 inviting him to apply is reprinted on page 501.

193. Schall, *Rhythm and Art in Germany*, 283; Isaacs, *Gropius*, 80 and Kindt, *Wandervogel... [Die] Bundische Zeit*, volume 3, 11-12. Bayer was a Bauhaus Master who had also been a student, and whose intellectual origins lie in the Youth Movement. His approach matured into a biocentric one only after his departure from the Bauhaus in 1928, so I will not discuss him here. Note that it was Bayer who invited Ostwald to lecture at the Bauhaus in 1927. Herbert Bayer's work, especially of the 1930s and 40s, is, as Alexander Dorner has shown, typically biocentric. See Dorner, *The Way Beyond Art*. For an account of Bayer's nature-centric thinking and work, see Stanislaus von Moos, "'Modern Art Gets Down to Business' Anmerkungen zu Alexander Dorner und Herbert Bayer" in *Herbert Bayer: Das künstlerische Werk 1918-1938* (Berlin: Bauhaus-Archiv, 1982), 93-105. For a concise statement of the importance of nature to Bayer's oeuvre, see Arthur Cohen, *Herbert Bayer: The Complete Work* (Cambridge Mass.: The MIT Press, 1984), 2.

194. Gropius, "Monumentale Kunst und Industriebau," quoted in Isaacs, *Gropius*, 33 and letter to Mackensen (19 October 1915), quoted in Isaacs, 45.

195. As an admirer of Scheerbart's writings, and as a member of Taut's circle, Gropius had been invited to join the Glass Chain correspondence, had accepted, but had then not participated in the actual letter writing, though he did engage in the selection of works for the "Ausstellung unbekanntes Architektur" in April 1919. See Franciscono, *Bauhaus*, 124, 144 and Whyte, Introduction, *The Glass Chain Letters*. See also Isaacs, *Gropius*, 64-6. On Behne and von Uexküll, see above. On the Arbeitsrat and Novembergruppe: Franciscono, *Bauhaus*, 123. See, e.g., Whitford, *Bauhaus*, Chapter 4. On Gropius in the pre-war Werkbund, see, e.g., Van de Velde, *Geschichte meines Lebens*, 354.

196. From an unpublished manuscript, dated by Peter Hahn to "Frühjahr, 1919," Peter Hahn, "Black Box Bauhaus: Ideen und Utopien der frühen Jahre" in *Das frühe Bauhaus und Johannes Itten*, 22.

197. Walter Gropius, "Program of the Staatlichen Bauhaus in Weimar," in Hans M. Wingler, ed., *The Bauhaus* (Cambridge, Mass.: The MIT Press, 1969), 32. See also Franciscono, *Bauhaus*, 137. While -- appropriately referring to Franciscono's work -- Schall rightly points out the Romantic roots of this drive towards unity, she misses its immediate grounding in the pre-war Monist discourse. See "Rhythm and Art in Germany," 280. For her important paragraph on the Nietzschean elements in this program, see the same page.

198. Schall, *Rhythm and Art in Germany*, 283-4. Gropius did not agree to Vogeler lecturing at the Bauhaus because his Communism would have inflamed the political situation. See Allan C. Greenberg, *Artists and Revolution: Dada and the Bauhaus 1917-1925* (Ann Arbor: UMI Research Press, 1979), 166-7. A stronger link between Graf Keyserling and the Bauhaus was his relatives' Weimar Pension. At various times Paul Klee, Oskar Schlemmer and Theo van Doesburg lived there. See: Tony Lasnitzky, "Meine Bauhauszeit" in: "Bauhaus" issue of *ICSACahier* no. 6-7 (1987): 48-9; *The Letters and Diaries of Oskar Schlemmer*. 97; Evert van Straaten, ed., *Theo van Doesburg 1883-1931. Een documentaire op basis van materiaal uit de schenking van Moorsel*. (The Hague: Staatsuitgeverij, 1983), 100.

199. Herbert Bayer, Walter Gropius, Ise Gropius, eds., *Bauhaus 1919-1928* (New York: MOMA, 1938), 84 and Wingler, ed., *Bauhaus*, 78. Driesch lectured on "Das Unbewusste" in 1925. (Henry, Paul Klee's Pictorial Mechanics," 149) On Ostwald as a member of the Board of Governors of The Friends of the Bauhaus, see Hahn and Wolsdorff, eds., *Bauhaus-Archiv Museum für Gestaltung*, 16. On Herbert Bayer's success in inviting Ostwald to lecture at the Dessau Bauhaus in the spring of 1927, see Bayer quoted in Gwen Findel Chanzit, *Herbert Bayer and Modernist Design in America* (Ann Arbor: UMI Research Press, 1987), 11 and Cohen, *Herbert Bayer: The Complete Work*, 82. Eva Weininger remembers that Ostwald gave a lecture series on "three afternoons or evenings" at the Bauhaus on his colour theory, though apparently few understood him. Sarah Lynn Henry, interview with Eva and Andreas Weininger, New York, 29 June 1983, 15. Henry has kindly sent me a copy of the transcript of her unpublished interview. Ise Gropius concurs that Ostwald lectured on his colour theory. (Henry, "Paul Klee's Pictorial Mechanics," 149) It is in this article that the importance of the *neue Naturphilosophie*, i.e. biocentrism, to the Bauhaus is stated clearly for the first time.

200. Bayer, Gropius, Gropius, eds., *Bauhaus 1919-1928*, 84. On Strzygowski's and Alma Mahler's visit to the Weimar Bauhaus around 1924, see Georg Muche, *Blickpunkt* (Tübingen: Verlag Ernst Wasmuth, 1965), 137.

201. See the correspondence between Magdalene Droste, Bettina Brand and Wolfgang Geinitz of 1989-90, *Bauhaus-Archiv Berlin*. Thanks to Frau Droste for allowing me to see this exchange of letters. In 1910-11, Prinzhorn's then partner, Erna Hoffmann and Mies' wife Ada studied together at Dalcroze's school in Dresden-Hellerau. See Wolfgang Geinitz, "Hans Prinzhorn. Das unstete Leben eines ewig Suchenden," *Hestia* (1986-87): 43-5. Prinzhorn planned to publish van der Rohe's *Baukunst. Von der Höhle zum Hochhaus* in his biocentric book series "Das Weltbild: Bücher des lebendigen Wissens." See the back cover of Prinzhorn, *Leib-Seele-Einheit*.

202. *The Letters and Diaries of Oskar Schlemmer*, 83. Schlemmer heard Prinzhorn's slide-illustrated lecture around early July 1920 at the home of Hans and Lily Hildebrandt in Cannstadt, near Stuttgart, while Prinzhorn was working at the psychiatric clinic of Heidelberg University (1919-1921). He does not specify where and when Klee heard Prinzhorn speak. Schreyer's account of his conversation with Paul Klee, the source of this text on Prinzhorn, would have taken place after the book's publication in June 1922 but before Schreyer's departure in 1923. Lothar Schreyer, *Erinnerungen an Sturm und Bauhaus* (Munich: Langen-Müller, 1956), 169. For the month of the book's appearance, see Geinitz, "Hans Prinzhorn," 51. For an early account of Prinzhorn's work in Heidelberg on the art of mentally ill people (though Prinzhorn's name is not mentioned), see Klages' friend, Alfred Kubin's "Die Kunst der Irren" *Das Kunstblatt* 6, no. 5 (May 1922): 185-7. On Prinzhorn see also Chapters Two and Five.

203. On Prinzhorn and Wigman, see Geinitz, "Hans Prinzhorn," 51-2.

204. See: Ernő Kállai, "bauen und leben," review of Hans Prinzhorn, *Leib-Seele-Einheit* (Potsdam and Zurich, 1927), *bauhaus* 3, no. 1 (January 1929): 12. Irene Blüh reports having studied psychology with Prinzhorn at the Bauhaus sometime between 1930 and 1933; she is probably referring to the 1932 lecture. See Wolf Herzogenrath, *Bauhausfotografie*, (Stuttgart: Insitut für Auslandsbeziehungen, 1983), 86. On Prinzhorn, Klee and Kállai at the Bauhaus see also Roskill, *Klee, Kandinsky, and the Thought of Their Time*, 142-3. See also Chapter Five on Prinzhorn at the Bauhaus. Prinzhorn's Bauhaus lecture "Grundlagen der neuen Persönlichkeitspsychologie" (16.3.29) seems to have been an early version of the ideas Prinzhorn later expressed in *Persönlichkeitspsychologie. Entwurf einer biozentrischen Wirklichkeitslehre vom Menschen* (Leipzig: Quelle & Meyer, 1932).

205. See Wingler, ed., *Bauhaus*, 160. On Krüger as a "holist" psychologist, see Anne Harrington, *Reenchanted Science: Holism in German Culture from Wilhelm II to Hitler* (Princeton: Princeton University Press, 1996), xxiv, 124-8. On Krüger as a supporter of Hitler, see pp. 177-8. On these lectures, and on the Meyer Bauhaus in general, see Chapter Five.

206. See the list in *bauhaus* 3, no. 2 (April-June 1929): 27.

207. On the Francés' social contacts, see Chapter Two. On Gropius and Förster-Nietzsche, see Isaacs, *Gropius*, 85. In 1919, Förster-Nietzsche campaigned for the provision of a house and studio space at the new Bauhaus for van de Velde, who had designed and furnished the Nietzsche-Archiv before the war. Later she supported the work of Hans Prinzhorn. See

Geinitz, "Hans Prinzhorn," 54-5. For a contemporary critique of the proto-Fascist aspect of Francé's biologism, see Raoul Hausmann, "Intellektualismus, Gesellschaft und Gemeinschaft," *Die Aktion* (15 July 1923): 347-351.

208. Raoul Francé, *Plasmatik: Die Wissenschaft der Zukunft* (Stuttgart: Walter Seifert, 1923), 9.

209. Annie Francé-Harrar, *So war's um Neunzehnhundert: Mein fin de siècle* (Munich and Vienna: Albert Langen and Georg Müller, 1962), 204-5. On the anti-Bauhaus feeling at the time in the town, see, e.g., Isaacs, *Gropius*, 81 and especially 116-17.

210. Francé-Harrar, *Mein fin de Siècle*, 204-6.

211. See Gropius' letter to Behne of 3 January 1923 thanking him for introducing him to Moholy-Nagy and El Lissitzky in this connection. Reprinted in: Janos Frecot and Diethart Kerbs, eds., *Werkbundarchiv: Erstes Jahrbuch* (Berlin: Werkbund-Archiv, 1972), 148. As we will see, El Lissitzky was also interested in Raoul Francé and biocentrism by 1923.

212. Scheler, *Wesen und Formen der Sympathie* (1913; 1922) (Berne: Francke, 1973), 82-104. On Scheler, see Chapter Two and Eleanor Jain, *Das Prinzip Leben: Lebensphilosophie und ästhetische Erziehung* (Frankfurt/Main: Peter Lang, 1993), 120-21. For an example of a vitalmystisch definition of Theosophy and Anthroposophy, see the unsigned article "Theosophie und Philosophie" in *Das Kunstblatt* 7, no. 1 (January 1923): 21-4; in which Theosophy is characterized as "eine Theologie der Natur."

213. Hahn, "Black Box Bauhaus," 29.

214. Von Tavel, "Johannes Itten," 38.

215. *Ibid.*, 49 and 53 respectively. On Itten and Goethe see page 53.

216. Wick, "Zwischen Rationalität," 161. On Itten's pedagogy, as organicist: Rainer Wick, "Zwischen Rationalität und Spiritualität: Johannes Ittens Vorkurs am Bauhaus," in *Das frühe Bauhaus und Johannes Itten*, 158-9. See also Franciscono, *Bauhaus*, 180ff, especially with respect to the *Kunsterziehungsbewegung* in Germany; and Herzogenrath and Kraus, *Bauhaus-Utopien*, 53-60. According to them -- though this is not documented -- Heinrich Jacoby was also one of Itten's pedagogical sources. (p. 53). This would have been via Itten's protégée Gertrud Grunow, whose assistant Hildegard Heitmeyer studied with Jacoby in Dresden-Hellerau. See Cornelius Steckner, "Die Musikpädagogin Gertrud Grunow als Meisterin der Formlehre am

Weimarer Bauhaus: Designtheorie und produktive Wahrnehmungsgestalt," in: *Das frühe Bauhaus und Johannes Itten*, 212, note 3.

217. Quoted in Franciscano, *Bauhaus*, 191-2. See a version of this text reprinted in Wingler, ed., *Bauhaus*, 49-50, originally published in the "Utopia-Mappe" of 1921.

218. Letter to Anna Höllering quoted by Rolf Bothe, "Der Turm des Feuers" in: *Das frühe Bauhaus und Johannes Itten*, 73. "Organische" is reproduced in Von Tavel, "Johannes Itten," 41.

219. Von Tavel, "Johannes Itten," 39.

220. Ibid., 39.

221. Hahn, "Black Box Bauhaus," 30. See also Rykwert, "The Dark Side of the Bauhaus."

222. Schall, "Rhythm and Art in Germany," 339.

223. Diary of 15 April 1915, *The Letters and Diaries of Oskar Schlemmer*, 26.

224. Diary of September 1915, *The Letters and Diaries of Oskar Schlemmer*, 31. The phrase "grosse Rätsel" is probably a reference to Haeckel's famous "Welträtsel." For the German original, see Andreas Hüneke, ed., *Oskar Schlemmer, Idealist der Form: Briefe, Tagebücher, Schriften* (Leipzig: Reclam, 1989), 23.

225. *The Letters and Diaries of Oskar Schlemmer*, 35. The translation has been slightly altered by Oliver Botar. For the original German, see Hüneke, ed., *Oskar Schlemmer, Idealist der Form*, 23.

226. Diary entry, Weimar, 28 July 1921, referring to "back in Stuttgart (i.e. ca. 1919-20). *The Letters and Diaries of Oskar Schlemmer*, 111-12.

227. Letter to Tut Schlemmer, Cannstadt, 9 May 1920, in Ibid., 79.

228. Letter to Otto Meyer, Cannstadt, 7 August 1920 in Ibid., 86. See also his 4 October 1920 and mid-December 1925 letters to Meyer (pp. 88-9; 183) and his diary entry of 25 June 1923 (p. 141). On Keyserling establishing the "Schule der Weisheit" in 1920, see Ute Gahlings, *Sinn und Ursprung: Untersuchungen zum philosophischen Weg Hermann Graf Keyserlings* (Sankt Augustin: Academia, 1992), vii. On Keyserling and Prinzhorn, see Geinitz, "Hans Prinzhorn."

229. Schall, "Rhythm and Art in Germany," 348.
230. On Klee and nature, see, e.g. Henry, *Paul Klee, Nature and Modern Science* in which she shows that Klee's artistic concern with nature, science and growth was strongest from about 1924 to 1931 (p. 220); Richard Verdi, *Klee and Nature* (London: A. Zwemmer, 1984); Sixten Ringbom, "Paul Klee and the Inner Truth to Nature," *Art Magazine* Vol. 52 (September 1977), 112-17; Ernst-Gerhard Güse, ed., *Paul Klee: Dialogue with Nature* (Munich: Prestel, 1991).
231. Henry, "Paul Klee's Pictorial Mechanics," 147.
232. Verdi, *Klee and Nature*, 212. On Klee and the theme of nature, pp. viii and 22-23. Verdi estimates that 25-33% of Klee's more than 9,000 works -- not including humans -- had nature as their subject matter. See also Verdi, "Botanical Imagery in the Art of Klee," in Güse, ed., *Paul Klee: Dialogue with Nature*, 18-31.
233. On Kandinsky and anthropology, see Peg Weiss, *Kandinsky and Old Russia: The Artist as Ethnographer and Shaman* (New Haven: Yale University Press, 1995). On Kandinsky, biology and biological imagery during his Paris period: Alfred Neumeyer, *The Search for Meaning in Modern Art* (Englewood Cliffs, N.J.: Prentice-Hall, 1961), 115; Phillipp Ritterbush, *The Art of Organic Forms*, 79; Paul Overy, *Kandinsky: The Language of the Eye* (London: Elek, 1969), 176; Hans Konrad Roethel, *Kandinsky* (Munich: Piper, 1982), 160; and most importantly, Vivian Endicott Barnett, "Kandinsky and Science: The Introduction of Biological Images in the Paris Period," in: *Kandinsky in Paris 1934-1944* (New York: Guggenheim Museum, 1985). On Kandinsky and physics: Eliode Vitale, "L'enseignement au Bauhaus de Weimar (1919-1925)" (Doctorat d'Etat, Université de Paris VIII, 1985), 672ff ("Kandinsky et la science"); Roskill, *Klee, Kandinsky, and the Thought of Their Time*, 141; Edna J. Garte, "Kandinsky's Ideas on Changes in Modern Physics and Their Implications for his Development," *Gazette des Beaux-Arts* no. 1425 (October 1987): 137-44; Hubertus Gassner and Wolfgang Kersten, "Physikalisches Weltbild und abstrakte Bildwelten bei Wassily Kandinsky" in Monika Wagner, ed., *Moderne Kunst* (Hamburg: Rowohlt's Enzyklopädie, 1991), 265-87.
234. Henry, "Paul Klee, Nature and Modern Science," xii. It comes as no surprise that Bauhaus graduate Karl-Peter Röhl should have his students at the Frankfurter Kunsthochschule (he taught there from 1926 to 1933) draw after nature not only the traditional themes of nudes, animals, and plants, but also patterns displayed in microscopic photographs, and close-up images of cut stones and shells. See Wingler, ed., *Kunsthochschule-reform 1900-1933*, 148, 186.

235. Carola Giedion-Welcker, *Paul Klee Alexander Gode*, transl., (New York: Viking Press, 1952), 92.

236. On this, see Chapter Four, and also: Charlotte Douglas, "Evolution and the Biological Metaphor in Modern Russian Art," *Art Journal*, 44, no. 2 (Summer 1984): 153-161; Heinrich Klotz, ed., *Matjuschin und die Leningrader Avantgarde* (Karlsruhe: Oktagon, 1991), Railing, "'The Machine is no More than a Brush'," and Corrada, "Mechanical and Organic Form in the Theory and Art of El Lissitzky."

237. Clark V. Poling, *Kandinsky-Unterricht am Bauhaus* (Weingarten: Kunstverlag Weingarten, 1982), 18.

238. Armin Zweite, "Free the Line to the Inner Sound," in Vivian Endicott Barnett and Armin Zweite, eds., *Kandinsky: Watercolors and Drawings* (Munich: Prestel, 1992), 27.

239. Kandinsky, "The Blaue Reiter (Recollection)," *Das Kunstblatt* (1930), in Lindsay and Vergo, eds., *Kandinsky: Complete Writings on Art*, 748.

240. Schlemmer, diary entry of 10 April 1915, in *The Letters and Diaries*, 22. The editors identify "Pankok" here as Bernhard Pankok, the Werkbund pioneer whom Schlemmer would have known from Stuttgart. (On him, see Chapter Five.) But what his discovery might be, is as yet unknown. C.f. Hünneke, ed., *Oskar Schlemmer. Idealist der Form.*, where "Pankok" is not identified, 16-17, 368, 426. On Kandinsky and the naturamorphic analogy see also Philippe Néagu, "Géométrisation et abstraction," in *L'invention d'un regard (1839-1918 exh. cat.* (Paris: Réunion des musées nationaux, 1989), 217-18.

241. Kandinsky, *Punkt und Linie zu Fläche* (Munich: Albert Langen, 1926), translated as: *Point and Line to Plane*, in: *Kandinsky: Complete Writings on Art*, 628.

242. Kandinsky, *Point and Line to Plane*, 628.

243. "[Klee] collected algae during his visits to the Baltic, pressed them between plates of glass, and entitled the arrangement 'Baltic forest'. He brought sea-urchins, sea-horses, corals, and molluscs from Sicily and other Mediterranean regions. He collected butterflies and stones -- crystals and petrified plants, amber, calcite crystals on coloured sandstone, quartzes and mica." Jürg Spiller, in Paul Klee, *The Thinking Eye*, 24. "Klee's natural history collection included sea and snail shells.... In the twenties he filled a portfolio with pictures and photographs of curious forms and shapes of the kind often published as 'wonders of nature.' A major part of this collection consisted of pictures, cross sections and x-rays of molluscs. *The Nature of Nature*, 289. See also Hart-

mann, "Die Spirale im bildnersichen Denken von Paul Klee."

244. Henry, "Paul Klee, Nature and Modern Science," xii. See Kandinsky, *Point and Line to Plane*, 555-6, 626-7, 629-30.

245. Barnett, "Kandinsky and Science," 69. The file is in the Kandinsky Library (Paris, Musée National d'Art Moderne, Centre Georges Pompidou, Fonds Kandinsky, inv. 908). It contains many scientific images, including two photographs from what seems to have been a review of Ernst Fuhrmann's *Die Pflanze als Lebewesen* (1930): "Der Same vom Reih erschnabel (?) als Erd-bohrer" and "Als ob die Kürbisblüte schon wüsste, wie schwer ein Kürbis ist"; two photos from Blossfeldt's *Urformen der Kunst* (Kandinsky owned the second edition of *Urformen der Kunst* {Berlin: Wasmuth, 1929}); Albert Leon's photograph *Schildkröter* from an unidentified journal; fragments from: G. von Borkow, "Leben unter Hochdruck. Die entschleierte Welt der Tiefsee" *Die Koralle* 6, no. 11 (February 1931): 495-9; and from the same issue, microscopic photographs of tongues. (Information on the last two items is from Barnett.)

246. Haeckel, *The Riddle of the Universe*, 2

247. Kandinsky, *Point and Line to Plane*, 537.

248. Kandinsky, "Two Directions" (1935), in: *Kandinsky: The Complete Writings on Art*, 779.

249. Henry, "Paul Klee, Nature and Modern Science," 81. For one of Lehmann's images, see Fig. 5-6. Paul Hinneberg, ed., *Die Kultur der Gegenwart* (Leipzig and Berlin: B.G.Teubner, 1908-) (Kandinsky Library, Paris, Musée National d'Art Moderne, Centre Georges Pompidou, Fonds Kandinsky). See Barnett, "Kandinsky and Science."

250. Arp is, along with Klee, a paradigmatic "Bioromantic" artist, i.e. one who combines biomorphic Modernist style with an unequivocal biocentric worldview.

251. As is well known, Steiner named the building at the centre of his anthroposophical headquarters in Dornach near Basel the "Goetheanum." On Haeckel and Steiner, see Bowler, *The Non-Darwinian Revolution*, 193; Barnett, "Kandinsky and Science," 86; Gordon, *Expressionism*, 22.

252. On Dacqué, see Chapter Two. Kandinsky owned two of his books: *Leben als Symbol* (Munich/Berlin: R. Oldenbourg, 1931), *Urwelt, Sage und Menschheit* (Munich/Berlin: R. Oldenbourg, 1928); (Kandinsky Library, Paris, Musée National d'Art Moderne, Centre Georges Pompidou, Fonds Kandinsky) On Maeterlinck's works in the Paris library, see Hahl-Koch, *Kandinsky*, 193. On Maeterlinck and Kandinsky, see also Kandinsky, *On the Spiri-*

tual in Art (1912) in *Kandinsky. Complete Writings on Art*, 146-7 and Rose-Carol Washton-Long, *Kandinsky: The Development of an Abstract Style* (Oxford: Clarendon Press, 1980), 61, 67-71.

253. Not all these authors discuss both Klee and Kandinsky and not all cite the specifically morphological tradition. See: Leopold Zahn, *Paul Klee: Leben, Werk, Geist* (Potsdam: Gustav Kiepenheuer, 1920), 16ff; Goldwater, *Primitivism in Modern Art*, 202; Giedion-Welcker, *Paul Klee*, 6; Daniel-Henry Kahnweiler, *Klee*, (New York: E. S. Herrmann, 1950), 17; Hofmann, "Ein Beitrag zur 'morphologischen Kunsttheorie' der Gegenwart," *Alte und neue Kunst* 2 (1953): 63-80; Sixten Ringbom, "Paul Klee and the Inner Truth to Nature," *Arts Magazine* 53 (September 1977): 112-17; Volker Harlan, "Naturerkennen und Kunstschaffen in Paul Klees Weltanschauung," type-script of a 1979 lecture held at the Paul Klee Symposium at the Paul Klee Stiftung Berne (Paul Klee Stiftung Kl 8 79.30); Richard Verdi, *Klee and Nature*, 212ff.; Zweite, "Free the Line to the Inner Sound," 27-8; Wiedmann, *Romantic Roots in Modern Art*, 169-70; Dirk Teubner, "Intuition und Genie: Aspekte des Transzendenten bei Paul Klee," in *Paul Klee: Konstruktion, Intuition* (Stuttgart: Gerd Hatje, 1990), 33-43; Harriet Watts, "Arp, Kandinsky, and the Legacy of Jakob Böhme," in Tuchman and Freeman, eds., *The Spiritual in Art*, 239-55. For a systematization of Klee's morphological thought, see Hans Bischlager, "Natürliche Konstruktionen und Wahrnehmungswandel im 20. Jahrhundert. Die Naturauffassung von Paul Klee, ." *Arcus* no. 6 (1983): 290-6. See also Will Grohmann's hints to this effect in *Paul Klee* (New York: Abrams, 1957), 183ff., 214.

254. Roskill, *Klee, Kandinsky and the Thought of Their Time*, 54-63. Wiedmann, *Romantic Roots in Modern Art*, 94-6. Jürgen Glaesemer's article on "Klee and German Romanticism" is the definitive one on the subject, however. In: Caroline Lanchner, ed., *Paul Klee* (New York: MOMA, 1995): 65-81. On the long-standing personal and professional relationship between Klee and Kandinsky, and on the close parallels between their aesthetic systems, see, e.g., Magdalene Droste, *Klee und Kandinsky: Erinnerung an eine Künstlerfreundschaft* (Stuttgart: Staatsgalerie, 1979), 9-22. See also Sabina Gmür, "Beuys und Klee: Ein Vergleich" (Lizentiatsarbeit, Zurich: Universität Zürich, 1985), in which she argues that German Romanticism, the poetry of Novalis in particular, was important to the development of Klee's theory of art. In his "Exakte Versuche im Bereiche der Kunst" (1928), Klee anticipates the accusations of "Romanticism! Cosmicism! Mysticism!" being leveled against his thought. See *The Thinking Eye*, 70. On Kandinsky and Nietzsche, see also Gordon, *Expressionism*, 15-16.

255. Jain, *Das Prinzip Leben*, 144. Priebe's text reads: "Kandinsky ... nicht nur in den lebensmystischen Strömungen seiner Zeit wurzelt, sondern dass in seine Vorstellung des 'inneren Klages' die Auseinandersetzung mit Bergson eingeht." Evelin Priebe, *Angst und Abstraktion: Die Funktion der Kunst in der Kunsttheorie Kandinskys* (Frankfurt/Main: Peter Lang, 1986), 155.

256. Charles Werner Haxthausen, *Paul Klee: The Formative Years* (New York: Garland, 1981), Chapter VII. Haxthausen writes: "Because crystal is inorganic it does not share the fate of organic life, it cannot die." (p. 423). Regine Prange makes this connection, at least implicitly, in *Das Kristalline als Kunstsymbol: Bruno Taut und Paul Klee. Zur Reflexion des Abstrakten in Kunst und Kunsttheorie der Moderne* (Hildesheim: Georg Olms, 1991).

257. Werner Haftmann, *The Mind and Work of Paul Klee* (London: Faber and Faber, 1964), 27. Ringbom refers to both Ernst Haeckel and to Heinrich Stadelman's reference to "biological thinking" in relation to Expressionist art in 1916. "Paul Klee and the Inner Truth to Nature," 115. Henry, "Paul Klee, Nature and Modern Science," 77-81. Even Henry is troubled by Klee's *neue Naturphilosophisch* approach to science: "Klee had mixed accurate scientific elements with 'regressive' philosophical language," she writes. Henry, "Paul Klee's Pictorial Mechanics," 148-9.

258. See Jain, *Das Prinzip Leben*, 142-7 and Priebe, *Angst und Abstraktion*, 25-6, 113-27. Jain is not an art historian, but has written on the history of art education. Priebe concludes that "eine intensivere Auseinandersetzung des Künstlers mit den Schriften Bergsons ist also um 1912 anzunehmen. (p. 123) Carola Giedion-Welcker, "Kandinsky's Malerei als Ausdruck eines geistigen Universalismus," *Werk* 37 (April 1950): 119-23. On Kandinsky and anti-Positivism early in the century, and on Kandinsky's relations to the writings of Fichte, Maeterlinck and Bergson, see Zweite, "Free the Line for the Inner Sound." Kandinsky owned Bergson's *Essais sur les données immédiates de la conscience* (Paris: Félix Alcan, 1924), and *Zeit und Freiheit* (Jena: Eugen Diederichs, 1911). Kandinsky left his first German library with Gabrielle Münter, and received parts of it back from her in 1926. (Information courtesy of Jessica Boissel, Fonds Kandinsky.) I have not seen the part of the library preserved by Münter, now in the Lehnbachhaus in Munich, but Hahl-Koch reports that Bergson's *Introduction to Metaphysics* (Jena 1912) is in that collection as well. (*Kandinsky*, 193) Kandinsky's friend Will Grohmann asserted that the artist was acquainted with Bergson's *Creative Evolution*. (Grohmann, "The Great Unity of a Great Work" in G. di San Lazzaro, ed., *Homage to Wassily Kandinsky*. New York: Leon Amiel, 1975, 14) Peter Selz remarked that Kandinsky's "philosophy finds perhaps its

closest parallel in the thinking of Henri Bergson." Selz, *Art in a Turbulent Era* (Ann Arbor: UMI Research Press, 1985), 112. For Priebe's literature review of the treatment (or lack thereof) of Kandinsky's Bergsonisme, see *Angst und Abstraktion*, 26-9.

259. Zahn, *Paul Klee: Leben, Werk, Geist*, 14.

260. Klee, Sixth exercise (3 July 1922). *The Thinking Eye*, 449.

261. Christof Hertel. "genesis der formen oder über die formen-theorie von klee" *bauhaus* 3 (December 1931), unpag. On Klee and the theories of Ernst Mach see Vitale, referring to the research of Marianne Teuber in "L'enseignement au Bauhaus de Weimar)," 510ff.

262. Willi Baumeister, *Das Unbekannte in der Kunst* (1947) (Cologne: DuMont, 1960), 77.

263. Klee, Notes of 27 November 1923, *The Nature of Nature*, 63. On this see also e.g., Christian Gelhaar, *Paul Klee and the Bauhaus* (Greenwich, Conn.: New York Graphic Society, 1973), 29.

264. Klee, *The Nature of Nature*, 259.

265. Jim M. Jordan, *Paul Klee and Cubism* (Princeton N.J.: Princeton University Press, 1984), 8.

266. Giedion-Welcker, *Paul Klee*, 6. Cf. also: "All becoming is based on movement." (*The Thinking Eye*, 76-80) and:
 Everything (the world) is of a dynamic nature; static problems make their appearance only at certain parts of the universe, in "edifices", on the crust of the various cosmic bodies. Our faltering existence on the outer crust of the earth should not prevent us from recognising this. For we know that, strictly speaking, everything has potential energy directed towards the centre of the earth. If we reduce our perspective to microscopic dimensions, we come once more to the realm of the dynamic, to the egg and to the cell. Accordingly there is a macroscopic dynamic and a microscopic dynamic. Between them stands the static exception: our human existence and its forms. (*The Thinking Eye*, 5 [1940])

267. Wassily Kandinsky in a letter to Gabrielle Münter, quoted in Hahl-Koch, *Kandinsky*, 178.

268. On *Dimensionisme*, see Oliver Botar, "Charles Sirató and the *Manifeste Dimensioniste*" in: Linda Dalrymple Henderson, Richard Frye and Bruce Clarke, eds., *Modernism and the Fourth Dimension* (Philadelphia: Pennsylvania State University Press) (upcoming).
269. Jean Arp, "Kandinsky" (1948) in Michel Seuphor, *L'art abstrait* (Paris: Maeght, 1950), 100. Among the many Vitalistic and Monistic pronouncements made by Kandinsky, see, e.g., his letter to Galka Schreyer quoted in Hahl-Koch, *Kandinsky*, 355.
270. Payl Overy, *Kandinsky: The Language of the Eye* (London: Elek, 1969), 176.
271. Kandinsky, *Point and Line to Plane*, 672.
272. On Klee and Kandinsky's organicism, see especially Hofmann, "Ein Beitrag zur 'morphologischen Kunsttheorie' der Gegenwart," and Wiedmann, *Romantic Roots in Modern Art*, 168-73.
273. Zweite, "Free the Line for the Inner Sound," 27.
274. Kandinsky, "Abstrakte Kunst," 643.
275. Kandinsky, *Point and Line to Plane*, 275.
276. In Kandinsky's library we find Felix Krüger's *Psychologische Optik* (Munich: Beck'sche Verlagsbuchhandlung, 1930), as well as a dedicated offprint of one of Krüger's articles; (Kandinsky Library, Paris, Musée National d'Art Moderne, Centre Georges Pompidou, Fonds Kandinsky)
277. For a critique of the theosophical/anthroposophical as well as Shamanistic line of art history (but their apparent replacement by Sufism and Orthodox Christianity), see Hahl-Koch, *Kandinsky*, 28, 177-8.
278. Fr. Polack et al., *Illustrierte Naturgeschichte der drei Reiche in Bildern, Vergleichen und Skizzen* (Wittenberg: R. Herrossé, 1887); Karl Friedrich Hoffrath Hoffmann's *Die Erde und ihre Bewohner* (Altona: G. Kalman & Cie., 1877), inscribed "Paul Klee 1895" the second year of Klee's Gymnasium studies. On Klee's science instruction at Gymnasium, see Henry, "Paul Klee's Pictorial Mechanics" 147, 163. (Alexander Klee collection, Berne)
279. Henry, "Paul Klee's Pictorial Mechanics," 148.
280. K. Porter Aichele, "Paul Klee and the Energetics-Atomistic Controversy," *Leonardo* 26, no. 4 (1993): 311. See also Henry, "Paul Klee, Nature and Modern Science," 80-81.

Kandinsky owned Wilhelm Ostwald's *Die Harmonie der Farben* (Leipzig: Unesma, 1923) and a volume of his letters; (Kandinsky Library, Paris, Musée National d'Art Moderne, Centre Georges Pompidou, Fonds Kandinsky)

281. (Jena 1914). Reported by Charles Haxthausn and refered to by Henry, "Paul Klee's Pictorial Mechanics," 162 note 4. Klee owned at least one volume of Bölsche's and Raoul Francé's "Kosmos" series of popular scientific books: Karl Weule, *Vom Kerbholz zum Alphabet. Urformen der Schrift* (Stuttgart: Kosmos, 1915). Reported in Henry, 163, note 9.

282. Wilhelm Bölsche, "Die Schönheitslinie der Natur," *Wiener Mode* 18, (1905). Quoted in Kockerbeck, *Ernst Haeckels "Kunstformen der Natur,"* 189.

283. Meinrad Maria Grewenig, in Güse, ed., *Paul Klee: Dialogue with Nature*, 58. *Pflanzenliebe*, pen and ink on Ingres paper, 19.5 X 10.3 cm. Alexander Klee coll. Klee's anthropomorphization of plants in works of the teens, and especially of the twenties relates to the contemporary biocentric discourse on plants as living beings. See Chapter Two on this.

284. Kandinsky, "Autobiographical Note" in *Kandinsky: Complete Writings on Art*, 343.

285. Peg Weiss, *Kandinsky in Munich: The Formative Jugendstil Years* (Princeton: Princeton University Press, 1979), 84.

286. On Kandinsky and the George/Wolfskehl circle in Munich, see Weiss, *Kandinsky in Munich*, 21-5, Chapter VIII and Schall, "Rhythm and Art in Germany." Hans Prinzhorn was associated with a related circle with contacts to Klages' lover, the Countess von Reventlow, and to Ricarda Huch, see: Geinitz, "Hans Prinzhorn," 42.

287. Peg Weiss, "Kandinsky in Munich: Encounters and Transformations" in *Kandinsky in Munich 1896-1914* (New York: Guggenheim Museum, 1982), 34, 45. On the influence of Obrist on Kandinsky see Priebe, *Angst und Abstraktion*, 110ff.

288. Hahl-Koch, *Kandinsky*, 193. On Klages and the Wolfskehl/George circle, see Washton-Long, *Kandinsky: The Development of an Abstract Style*, 17-18. Washton-Long points out that Kandinsky's direct participation in the circle can only be documented as far back as 1907. See also Roderich Huch, *Alfred Schuler, Ludwig Klages und Stefan George. Erinnerungen an Kreise und Krisen der Jahrhundertwende in München-Schwabing* (Amsterdam: Castrum Peregrini Press, 1973). Priebe has discussed the relationship between Kandinsky's and Klages' thought in *Angst und Abstraktion*, 113-14.

289. Scheler describes what I would refer to as biocentrism in the following terms: "Fechner, Bergson, Phänomenologie, Vitalismus, Kreis um Stefan George, Jugendbewegungen." Scheler, *Wesen und Formen der Sympathie*, 104. As we have seen, Evelyn Priebe is the only scholar to have discussed Kandinsky within this milieu in relation to Neo-Vitalism and Monism. I wish to thank Rose-Carol Washton-Long for her suggestion to examine the George circle.

290. Kubin was too shy to introduce himself to Klages after he began to frequent Karl Wolfskehl's Munich circle in 1903, but he met him by chance on a train during the summer of 1911 and was deeply impressed by him. He invited him in August to his home in Zwickledt in Austria. See Annegret Hoberg, ed., *Alfred Kubin 1877-1959* (Munich: Lenbachhaus and Hamburger Kunsthalle, 1990), 16, 21, 72-3, 180. On Kubin and Prinzhorn in 1922, see p. 25. For Kubin and Franz Marc's correspondence, see Gollek, ed., *Franz Marc*, 123-9.

291. Quoted in Haftmann, *The Mind and Work of Paul Klee*, 46-7. On Kubin and Klee, see also Sabine Rewald's interview with Felix Klee in: Sabine Rewald, *Paul Klee. The Berggruen Collection in the Metropolitan Museum of Art* (New York: The Metropolitan Museum of Art), 31.

292. Klages, *Vom kosmogonischen Eros* (Munich: Georg Müller, 1922) Information courtesy of Michael Baumgartner, Paul-Klee-Stiftung, Kunstmuseum Bern, (letter of 23 June 1997).

293. Klee, *The Thinking Eye*, 4, 9.

294. Paul Klee, *Eros*, watercolour 1923 (33.3 X 24.5 cm). While Christian Gelhaar does not refer to Klages, in connection with this work he writes: "For the meaning of the content of the work it is only necessary to recall the cosmogonic role of Eros in the ancient Creation-myths." Christian Gelhaar, *Paul Klee and the Bauhaus*, 56.

295. Grohmann, *Paul Klee*. For the parallels between Klee's and Francé's thinking, see below.

296. Haftmann, *The Mind and Work of Paul Klee*, 29-30. Felix Klee reported that Klee owned a copy of *Kunstformen der Natur*. (Richard Verdi, *Klee and Nature*, 90, 227) Klee's work *Dynamo-Radiolaria* of 1926 is probably a reference to *Kunstformen der Natur*, which featured many radiolaria. (Referred to in Grohmann, *Paul Klee*, 265.)

297. On the station and his discovery, see Hans Driesch, *Lebenserinnerungen. Aufzeichnungen eines Forschers und Denkers in entscheidender Zeit* (Basle: Ernst Reinhard, 1951), 88-96. On Klee's visit, See Felix Klee, ed., *The Diaries of Paul*

Klee, 97-98.

298. Driesch was not in Naples during Klee's visit, as he left "im Frühjahr 1902" and only returned "im Frühjahr 1903." (Driesch, *Lebenserinnerungen*, 128)

299. Grohmann, *Paul Klee*, 67. See also Henry, "Paul Klee's Pictorial Mechanics," 163, notes 23 and 24.

300. Weiss, *Kandinsky and Old Russia*, 28-30.

301. See Hofmann, "Ein Beitrag zur 'morphologischen Kunsttheorie' der Gegenwart," and Kandinsky, *Point and Line to Plane*, 631.

302. Barnet, "Kandinsky and Science," 86-7.

303. Karin Hirdina, "Zur Ästhetik des Bauhausfunktionalismus," in, "50 Jahre Bauhaus Dessau" special issue of *Wissenschaftliche Zeitschrift der Hochschule für Architektur und Bauwesen Weimar* 23, no. 5-6 (1976): 520-1. The classic treatment of the idea of function in architecture is Edward de Zurko, *Origins of Functionalist Theory* (New York: Columbia University Press, 1957).

304. Fransiscono, *Bauhaus*, 245.

CHAPTER FOUR

Raoul Francé, the Biocentric Constructivist Discourse, and Moholy-Nagy's New Vision

Wir müssen die Herrschaft der Technik abschütteln.
(Behne 1918)¹

Beweglichkeit, dem Akademischen werfe ich den Fehdehandschuh hin, kein mechanischer Aufbau, sondern lebendiger, organischer. (Gropius 1919)²

L'avion et la limousine sont des créations pures qui caractérisent nettement l'esprit, le style de notre époque. (Le Corbusier 1920)³

The organization of industrial life has given rise to new forms that are totally different from those of organic origin. ("Engineerism" n.d. c. 1922)⁴

We have lost unity with nature and the religion of the supernatural. Our actions are executed in accordance with laws of scientifically and technically determined, rationally organized energies. This can be taken as tragic or accepted with equanimity: For an art that ... wants to face this given, civilizing reality, this urgently calls for intellectual lucidity and discipline rather than unconscious or metaphysical oppression. It is not organic growth, but abstract construction that is to be spiritualized. (Kállai 1922)⁵

Das Mechanische ... ist unmittelbarster Ausgleich des Statischen und Dynamischen.... Wenn ... Kultur ... Unabhängigkeit von der Natur bedeutet, dann darf es uns nicht wundern, weshalb für das kulturelle Stilwollen die Maschine im Vordergrund steht. Die Maschine ist das Phänomen geistiger Disziplin par excellence.... [Ihre] neuen Möglichkeiten ... haben eine unserer Zeit entsprechende Ästhetik geschaffen, welche ich ... die 'Mechanische Ästhetik' genannt habe. (van Doesburg 1922)⁶

En mocht de techniek ons geven wat wij verlangen, mocht de menscheid opbouwen uit deze stof een nieuwe wereld, dan zullen wij wederom ... vroolijk zijn in te tuinen der fantasie en dwalen met onzen geest en onze ziel door het vroolijk labyrinth van den kosmos. En kunst en techniek zullen broederlijk in die tuinen spelen... Stil lacht de natuur in haar almacht en laat de kinderen spelen. (Wijdeveld 1923)⁷

La machine ... opère dans le monde une réformation de l'esprit... La leçon de la machine est dans la pure relation de cause à effet. (Le Corbusier 1925)⁸

Mécano (van Doesburg 1922)⁹

La maison est une machine à habiter. (Le Corbusier 1925)¹⁰

Hausorganismus. (Ebeling 1926)¹¹

It is not difficult to show that Nature will never be completely conquered by Man's technological creations The machine is much more like an animate organism than is generally thought.... Therefore we must learn to regard the machine not as something dead ... but as something animated, organic, alive. (Toporkov 1921)¹²

We have had enough of perpetually hearing MACHINE, MACHINE, MACHINE, MACHINE when it comes to modern art-production.... We wish to design ... the peace of nature.... Our work is not a philosophy and not a system for acquiring cognition of nature, it is a limb of nature.... There is still a civil war going on with opposing opinions; and today this civil war is art's fight for its life. (El Lissitzky 1924)¹³

The end of a civilization that considers buildings as mere machines is that it considers human beings as mere machine-tenders: it therefore frustrates or diverts the more vital impulses which would lead to the culture of the earth... (Mumford 1924)¹⁴

Das Leben ist eben nicht bloss ein materielles, sondern auch ein funktionelles Problem. (Francé 1923)¹⁵

Das Bewusstsein der herrschenden materialistischen Weltanschauung ist ein mechanisches, dem sich für uns die universale Funktionalität entgegenstellt. (Hausmann 1924)¹⁶

Wenn der Funktionalist sich auf die Maschine beruft, so sieht er in ihr ... die vollkommene Annäherung an das Organische. Wenn der Utilitarist sich auf die Maschine beruft, so sieht er in ihr das ökonomische Prinzip: Arbeits-, Kraft- und Zeitsparnis. (Behne 1926)¹⁷

Die Form des Baumes ist eins mit seinem Wachstumsprozess, der ein lebendig organischer ist, ebenso

wie die Form einer Maschine eins ist mit den in ihr organisierten Kräften. (Rietzler 1926)¹⁸

The "Constructivists" also operated with materials, but secondarily, for the sake of their formal tasks [They] did not take into account the organic connection between material and its tensile capacity in [their] work.... [I]t is only as a result of the dynamics resulting from these interrelationships that a vital and inevitable form is born.... My [flying machine] is built on the principle of utilizing living, organic forms. (Tatlin 1932)¹⁹

Das Weltgesetz erzwingt es, dass zuletzt die Technik des Organischen und die des Menschen identisch sind. (Francé 1920)²⁰

Die Technik ist ein organisch sich entwickelnder Lebensfaktor. (Moholy-Nagy, 1929)²¹

1. "Biocentric Constructivism": Towards a Synthesis of the "Machine Analogy" and the "Biological Analogy"

These passages circumscribe the aesthetic debate carried on during the early 1920s as part of the controversy on nature and technology that Friedrich Dessauer termed the "Streit um die Technik."²² At the core of this debate was a perceived dichotomy between "nature" and "technology," of a "technocentric" versus a "biocentric" position; a transposition of the dichotomy between *Seele* and *Geist* which carried with it the ideological baggage of that opposition. While in the immediate post-war situation an anti-war, anti-technological position was widespread, the debate became more complicated with the consolidation of the German economy towards 1923-24.²³ It was intense enough around that time for the Belorussian Jewish artist Lazar El Lissitzky to refer to it as a "civil war" within art. Monist organicists such as Adolf Behne and Raoul Hausmann, and a biocentric Constructivist such as Lissitzky, took the side of "nature" in this debate, for -- like Ludwig Klages and Oswald Spengler -- they saw technology and mechanization as destructive manifestations of *Geist* and *Welt*.²⁴ For

others such as van Doesburg, Werner Graeff, Ernő Kállai and the Paris Purists -- despite what might be termed a "biocentric unconscious" discernable in their thinking -- at this stage "nature" was for them redolent of outdated romantic attitudes inappropriate for the mechanized post-war era.²⁵ Rather than nature, machines were to be the source of a "new spirituality" and matter was to be "denaturalized," as van Doesburg put it in the title of a collage of this period.²⁶ This dichotomy has been modelled by Peter Collins as a contest between the "machine analogy," the idea that art and architecture should emulate machinery, and the "biological analogy," that nature's structures and processes should act as models instead.²⁷ Oskar Schlemmer articulated these tensions thus:

These two alternatives strike me as typical of current trends in Germany[:] On the one hand, the influence of oriental culture ... [and] a return to nature in the Wandervogel movement and others like it; also communes, vegetarianism, Tolstoyism, reaction against the war; and on the other hand, the American spirit, progress, the marvels of technology and invention, the urban environment.... I affirm both possibilities, or at least I would like to see cross-fertilization between [them]. Or are progress ... and self-fulfillment ... mutually exclusive?²⁸

He elaborates on this "cross-fertilization" elsewhere in his diary: "Both these modes of consciousness ... are symptoms of one and the same yearning. A yearning for synthesis dominates today's art...."²⁹ Sensitive to new trends, well-placed at the Bauhaus to keep abreast of them, and reflecting his own Monism, Schlemmer not only identified this tension, he also articulated something crucial to my argument here: the Monist-inspired desire for its synthetic resolution. For some, the resolution resided in a shift to biocentrism, which resulted in what might be termed a "biocentric Constructivist discourse," a discourse out of which, in turn, László Moholy-Nagy's "New Vision" arose. Hence Raoul Hausmann's slogan of 1921: "Wir wollen in dieser mitteleuropäischer Flachheit endlich den Aspekt einer Welt, die real ist, eine Synthese des

Geistes und der Materie...."³⁰ As we shall see in Chapter Five, this New Vision gave rise to the incorporation of the results of scientific imaging processes into the discourse of high art, making such images readily available to artists. A mediate position was occupied by the Polish Constructivists Mieczyslaw Szczuka and Teresa Zarnower, who wrote, "Constructivism does not imitate the machine, but it finds its equivalent in the machine's simplicity and logic."³¹

The debate Schlemmer articulated was central to the cultural shift occurring in Europe -- what John Willett has referred to as the "turning point" of 1921 to 1923³² -- from personal, "emotional," expressionist cultural forms towards rectilinear abstract, ostensibly "elemental," impersonal, "sachlich," and "functional" ones; from Expressionism towards what came to be known as a *neue Sachlichkeit*, a new objectivity in architecture, design and photography, and "Constructivism" in painting and sculpture, what Willett has summarized as "The New Sobriety."³³ "Arbeit. Klarheit. Organisation." wrote the Russian writer Ilya Ehrenburg in 1921, in *Und sie bewegt sich doch*, his manifesto of the New Sobriety, which appeared the next year in Berlin and Moscow.³⁴ "Unsere 'Gefühle' hindern uns daran, das für uns wahrhaft Wesentliche zu sehen," wrote Werner Graeff and Hans Richter in the first issue of their International Constructivist journal *G* [Berlin: 1923-26].³⁵ Gustav Hartlaub phrased it thus in the "Neue Sachlichkeit" exhibition catalogue: "Today, buffeted as we are by the most profound upsets and wild fluctuations in our lives and values, we see the differences more clearly: the move toward topical, restrained findings in some, the emphasis on concreteness, the technical precision in all."³⁶

a. International Constructivism in Germany

Besides the pre-war tradition of Hermann Muthesius, Henry van de Velde and the *Werkbund* in Germany, there were key imports which stimulated the rise of *sachlich* design and artistic

Constructivism in post-war Germany: Paris *Purisme*, the Dutch *De Stijl* circle, Hungarian emigré "Constructivism," and its Russian original. While in the debate on nature and technology they all privileged the machine analogy at this stage, they also occupied complex positions blending technophilia (or "technomania" as Kállai later phrased it), biocentrism and idealism; positions fluid enough to allow for the emergence of a biocentrically informed Constructivist ideology in some.

Embodying the post-war *rappel à l'ordre*, rooted in the ideas of the *Werkbund* and its pre-war organ the *Werkbund-Jahrbuch*, the Swiss expatriate Charles-Edouard Jeanneret's and the Frenchman Amadé Ozenfant's journal *L'Esprit Nouveau* appeared in Paris in the fall of 1920.³⁷ The German understanding of this phenomenon was epitomized by the critic Waldemar George, who in 1927 wrote that in France "dieser Antiromantismus hatte sein Organ im 'Esprit Nouveau', der zum Sprachrohr einer 'mathematischen' Kunst wurde."³⁸ In their art Jeanneret and Ozenfant were working in a restrained, orthogonal-abstract style of post-Cubist painting, and in their journal they addressed issues of the relationship between art, nature, science, mathematics and technology. When he resumed architectural design in 1922, "Le Corbusier" employed a pared-down, rectilinear style. Despite the post-war tensions between Berlin and Paris, this journal became known in German avant-garde circles by early the following year and contact was maintained by critics as important as Behne and Westheim, the latter the editor of the influential Berlin art journal *Das Kunstblatt* [Weimar; Berlin: 1917-1933].³⁹ The juxtaposition of architecture, art and machines; the Purist style, and the material on scientific, philosophical, psycho-analytic, literary, and artistic subjects in *L'Esprit Nouveau* made a deep impression on the Central European avant-garde of the day,⁴⁰ and in effect gave foreign legitimation to the *Werkbund's* ideology at a time when anything German was in disrepute. In their call for "un esprit de construction et de

synthèse," the Purists offered one answer to Schlemmer's Monist *Sehnsucht*.⁴¹

The Purist aesthetic was a complex and contradictory amalgam of Platonism and Pythagorean philosophy spiced with healthy doses of anthropocentrism and Organicism.⁴² While it was, in the 20s -- as von Moos phrases it -- essentially "Neoplatonic and idealist,"⁴³ it also contained within it what could be termed a "biocentric unconscious," one which came increasingly to the fore as time wore on.⁴⁴ Thus, though the "mathematical" art Waldemar George referred to was one based on the Golden Section proportions Le Corbusier came to adopt as a result of his direct study of nature, and though "le Corbusier constantly points to the basic analogies between biology and building," the "Nordic" *kosmovitale Einsfühlung* was missing; "there was hardly ever the sense of solidarity and conspiracy with a natural site that was so important to architects such as Neutra, Wright, or Aalto."⁴⁵ The ideal realm of mathematics -- associated with technology -- rather than deriving from "nature," was seen to precede and underlie it.⁴⁶ Von Moos has provided us with the most cogent resumé of this complex, early Purist position:

On the formal level, geometry frequently serves not only as an antithesis to nature but also as the mediator by which nature can be extended into the man-made environment. On the conceptual level, geometry, and mathematics in general, provide the structure through which nature, and the cosmos, can be understood and organized. To discover nature with the help of geometry and to use geometry as a cabalistic key -- not only to an intellectual understanding, but also to a pantheistic experience of nature.⁴⁷

Rather than through a direct experience of "nature," it was through a Pythagorean sense of the underlying geometric order of the cosmos that *kosmovitale Einsfühlung* was experienced. Indeed, in 1923 Le Corbusier and Ozenfant held that "la nature est un fait extérieur à l'homme, elle est multiple, diffuse, généralement insaisissable."⁴⁸ They display a veritable revulsion to natural forms in their 1924 criticism of Hermann

Finsterlin's biomorphic architectural fantasy drawings published in the Dutch organicist journal *Wendingen* [The Hague, 1918-1925] as "de visqueuses éjaculations rappelant les horreurs sous-marines ou celles des viscères ou celles des actes impurs de la bête."⁴⁹ Given this it seems appropriate that during the early twenties the Purists privileged mechanism over Organicism: "On the basis of their enthusiasm for the moral and aesthetic virtues of modern engineering, the two authors develop a kind of rationalist cosmology in which they describe nature as a logical machine whose adherence to physical laws is the very reason for its beauty."⁵⁰ Since machinery was invoked as a model for beauty rather than as a functional exemplar, at base theirs was not a functionalist aesthetic at this time.⁵¹ In the early twenties the Purists mechanized nature rather than naturalizing machines, adhering to what Philip Steadman refers to as "machine-theoretical biology."⁵² Their exemplary expression of the mechanical analogy is the famous spread in *L'Esprit Nouveau* comparing Greek temples to late-model cars.⁵³ (Fig. 4-1) And rather than "natural" forms, Le Corbusier cited Platonic bodies (cylinder, pyramid, cube, right-angled parallelepiped, sphere) as the sources of architectural form.⁵⁴ What is more, technologically produced forms were superior to natural ones.⁵⁵ (Fig. 4-2)

Theo van Doesburg's Dada poem "Manifest 0,96013" of 1922 expressed in an intentionally humorous -- though equally sexualized -- manner the revulsion to the natural that the Purists had displayed in their attack on Finsterlin's biomorphic architecture: "Le Monde est une petite Maschine [sic] a Sperme, La vie -- une maladie vénérique. Toutes mes prières sont dédiés à la Sainte-Vénérique."⁵⁶ In his writings and practice, and on the pages of his journal *De Stijl* [Leiden and Paris, 1917-28], Van Doesburg developed an "anti-natural" art theory and orthogonal style which was another important source for post-war German *Neue Sachlichkeit* and Constructivism.⁵⁷ Despite the fact that -- having emerged from the Dutch occult

revival -- van Doesburg adopted *vitalmystisch* attitudes towards nature, and that -- like Behne and Karl Ernst Osthaus -- he was an avid reader of von Uexküll, by the early 20s he came to represent a position correctly described by Mansbach as one privileging technology over nature.⁵⁸ As John Elderfield articulated it:

Van Doesburg rejected the organic analogy. Although De Stijl [as the Purists] posited a cosmic geometry that lay behind natural appearances, it had always been an anti-naturalist movement. Since nature was brute matter concealing a truer reality (the geometric architecture of the universe), it was necessary to separate man from nature to create the new style.⁵⁹

As we saw in the quotation at the start of this section, van Doesburg did not abandon the concept of the "spiritual" at this time. Rather, like the Purists he declared that "die Maschine ist das Phänomen geistiger Disziplin par excellence." And as Kállai articulated it in the passage of 1922 quoted at the start of the Chapter, "it is not organic growth, but abstract construction that is to be spiritualized."

The following year Kállai elaborated on this idea: "Constructive art, in tandem with the discoveries of the natural sciences and technical innovations, can master ever more completely every resistance of matter."⁶⁰ A theorist and promoter of International Constructivism in Germany, Kállai was formulating texts which, while taking what has been seen to be a typically "Constructivist" anti-natural stance, reflect not only an awareness of *Lebensphilosophie* and the Monist discourse, but also a desire for a rapprochement between what he saw as the dialectical pair "nature" and "technology," between the "organic" and the "modern."⁶¹ Referring to the Monism of neo-Romanticism during the early 20th century and its manifestation in Expressionism, Kállai wrote in 1922 that "The unity of the world and its creative law finally became identical with human consciousness. It took a long time, however, for this realization to be liberated from the traditional view of

a transcendent order, for art to be seen as a simple expression of humanity."⁶² Kállai properly saw Expressionism as a late Romanticism, a manifestation of the traditional understanding of this Monist view, and he opposed it at this time. According to him, Constructivism was the approach which liberated humanity from its attachment to nature, while maintaining an awareness of humanity's and nature's essential unity.⁶³

Along with his fellow Hungarian exiles Moholy-Nagy, László Péri, and Lajos Kassák, Kállai was one of the first Central Europeans to hear of Russian Constructivism when the Hungarian artist Béla Uitz -- who had seen the "First Working Group of Constructivists" exhibition in May and had met the artists -- passed through Berlin on his return from Moscow in the fall of 1921.⁶⁴ Probably at the end of that year the Berlin Hungarians also heard of Constructivism from Alfréd Kemény, another compatriot fresh from a stay in Moscow, one who had lectured on Constructivism at the INKhUK itself.⁶⁵ While -- like the Finnish-born Ivan Puni and the Ukrainian Alexander Archipenko -- there were avant-garde artists from Russia in Berlin, it was not until El Lissitzky's arrival late in 1921 or early in 1922 that an artist with first-hand experience of Constructivism was on the scene. Though he had been in Malevich's rather than Rodchenko's circle in Soviet Russia, Lissitzky became one of the seminal figures of the emergent International Constructivist circle in Berlin.⁶⁶ The émigré Hungarian journals *Ma* [Today, Budapest and Vienna: 1917-25] and *Egység* [Unity, Vienna and Berlin: 1922-24], had brought Russian and International Constructivist material during the first half of 1922, but because they were Hungarian-language publications, they remained largely inaccessible to the germanophone public.⁶⁷ In April and May of 1922, Lissitzky and Ehrenburg published two issues of *Vjeshch* [Object] in Berlin, in which aspects of Russian Constructivism were presented, and that same year Ehrenburg's *Und sie bewegt sich doch* appeared.⁶⁸ The "Erste Russische Kunstausstellung" of October

1922 included Russian Constructivist material along with much else, and was the sensation of the Berlin art season.

While in their glorification of industrial production, of the engineer as a model for the artist ("Engineerism"), and of the beauty of industrial products, they were displaying a penchant for the machine analogy of art,⁶⁹ what has been overlooked in most accounts of this emergent International Constructivism is that inherent to Russian Constructivism was an Organicist undertow, particularly in the thinking and work of its inspirational figure Vladimir Tatlin.⁷⁰ As Patricia Railing observes, for the Russian avant-garde, "Even the machine was created out of the organic laws of nature, first of all as material and secondly as structure. It harmonized form and function. Thus, being a product of organic laws itself, the relationship between the machine and the organic should not be thought of in terms of a duality or a dialectic. Together they are processes, and together they weave their way through ... theory and ... practice."⁷¹ She points out, furthermore, the essentially organic nature of the Constructivists' interest in *faktur* or material properties, and that "for their part the Suprematists relied on the notion of organic laws as their basis of all creativity...."⁷² Tatlin's "Maschinenkunst," popularized by the placard photographed at the First Berlin Dada Fair of June 1920, was a myth based on a misunderstanding.⁷³ Given that Organicism was inherent to Constructivism and Suprematism, it seems less surprising that Lissitzky, moving between these circles and active on the International Constructivist scene, was taken by first Spengler's and then Francé's ideas.⁷⁴

As a consequence of these developments the orthogonal-abstract style associated with Purism, Russian Constructivism, *De Stijl*, and the Hungarian emigré artists, became fashionable among the German avant-garde, reinforcing analogous home-grown trends. As early as February or March of 1922, the expatriates Kemény, Moholy-Nagy, Péri, Kállai, Lissitzky, Gabo, Viking

Eggeling, and Van Doesburg, as well as the Germans Arp, Hans Richter, Werner Graeff, Willy Baumeister, and a few others, had met in the Berlin artist Gert Caden's studio to found an informal Constructivist group.⁷⁵ Just as an attempt failed in Düsseldorf the next July, however, the effort to found a "Constructivist International" in Weimar that September foundered on the rock of joint participation by "Constructivists" and "Dadaists."⁷⁶ But the appearance of Moholy-Nagy and Kassák's *Buch neuer Künstler* in Vienna that same September did provide them with a compendium of International Constructivist material. Finally, in July of 1923 Graeff, Lissitzky and Richter, in collaboration with the Berlin International Constructivist circle, produced the first issue of *G*, a German organ of International Constructivism.⁷⁷

It is in this context -- as well as in the context of Hausmann's, Arp's and Moholy-Nagy's biocentrism -- that their and Ivan Puni's October 1921 "Call to Elemental Art" and Moholy's and Kemény's "Dynamic-Constructive System of Forces" should be regarded.⁷⁸ The "Call" is easily understood as a proto-Greenbergian manifesto of formalist "Constructivism" because in it the artists called on others to "construct" their art employing only those elements which are properly of the medium in which they are working. But this statement's meaning is determined by the sentences which follow:

To surrender to the elements of form-giving is to be an artist. The elements of art can only be discovered by an artist. They do not come about as a result of his individual choice; the individual is not an entity broken off from the whole and an artist is but an exponent of the forces that give shape to the elements of the world.⁷⁹

Or, as Hausmann put it in an unpublished Marcusian text of that same year, "Malerei und Plastik haben die geistige Wirklichkeit, die Spur der Unendlichkeit in der Identität, in räumlichen, körperlichen Formen zu kristallisieren, die haben ein Ausfluss der unaufhörlich bewegten, beweglichen Welt zu sein, kein kaltes Denkmal erstarrender Hilfskonstruktionen des

Erinnerns..."⁸⁰ It is as an "organic" and "vital" expression of these forces that, a year later Hausmann and László Péri articulated their theatrical dance style "Pré," and Moholy-Nagy and Alfréd Kemény proposed their midway-ride-like art environment, the "Dynamisch-konstruktives Kraftsystem," which begins with the thoroughly *lebensphilosophisch* phrase "Die vitale Konstruktivität ist die Erscheinungsform des Lebens und das Prinzip aller menschlichen und kosmischen Entfaltungen."⁸¹ These texts are statements of the individual's lack of autonomous subjecthood within the unitary system of nature, and the mission of art as a means to give its forces expression, a biocentric position which Arp, Moholy-Nagy and Hausmann were to hold for the rest of their lives. Biocentrism and its psychobiological view of the human psyche in the universal natural system is also the context within which the technology/nature debate is to be understood. This was the means by which Schlemmer's desire for their synthesis was to be achieved.

b. Paul Westheim's Intervention: Enter Raoul Francé

Classical machine parts such as gears, pins, cams, and bearing plates (reduced to their basic geometric equivalents) are equated in the subconscious of industrial society with the life force itself.⁸²

Though Jack Burnham did not know of Raoul Francé's conception of the seven *Grundformen* of nature, with typical sapience he nevertheless articulates a crucial consequence of Francé's effect on avant-garde practitioners in Germany during the twenties. The pre-war attempt undertaken by Hermann Muthesius, van de Velde and the German Werkbund to effect *Sachlichkeit*, a rapprochement between technology and art, to articulate a "functionalism," resurfaced at the start of the decade. In June of 1920 Paul Westheim began a campaign against the emotional and stylistic excesses of "Expressionism," directed in part against his rival, the impresario, dealer and publisher Herwarth Walden. In "Das 'Ende des Expressionismus'" Westheim, employing the melodramatic tone of those times,

exhorted; "The Expressionist academy, Expressionist fashion, Expressionist fellow-travellers, that catchphrase Expressionism with which the smart art dealer and smooth art critics practice their propaganda: would that it was already at an end!"⁸³ In the first issue of the 1921 volume of his journal he reported the rush to coin an alternative catchphrase for the new artistic direction in formation: "Suprematismus, Tatlinismus, Kompressionismus, Kubo-Futurismus, Neo-Klassizismus, Neo-Primitivismus" are the alternatives included in this ironic listing.⁸⁴ Always one to notice a new trend, Walden was eager to jump on the streetcar so recently set in motion. In April 1921 he published "Technik und Kunst" in his journal *Der Sturm* [Berlin: 1910-32], in which he propounded an organicist analogy between artworks and machinery: "Jedes technische Werk hat eine und zwar eine eindeutige Wirkung. Kunst und Technik setzen die sinngemässe Verwendung der Mittel voraus. Denn nur dadurch entsteht ein Organismus."⁸⁵ Inspired by the example of *L'Esprit Nouveau*, that same month, in his article on abstract art, Westheim turned from the mere criticism of what he saw to be an Expressionism in the process of degeneration, to a constructive intervention into the debate. He criticized the "Formlosigkeit" of German Expressionist abstraction and contrasted it with recent trends in France where the Cézannèsque tradition resulted in "Bestimmtheit, Klarheit, Ordnung, Gesetzhaftigkeit.... So ist es begreiflich," he continued, "dass es eine Kandinsky-Schule von irgend welcher Geltung in Frankreich nicht gibt.... Die Form ist nicht irgendeines der Schaffenprobleme, sie ist das Urphänomen alles Kunstgestaltens."⁸⁶ Rather than with the "Gretchenfrage: ob gegenständlich, ob ungegenständlich," artists, he maintained, should concern themselves with a "weitaus geistigeres Problem: Disziplinierung im Architektonischen."⁸⁷ Later that year, in a series of reports on his visit to Paris, Westheim continued this line of thinking and provided a more detailed program for this new "architectonic" art:

Klares Denken, Bewusstheit, logische Bestimmtheit, Sachlichkeit, das sind die Forderungen, die man allenthalben und unerbittlich stellt... [Die] organisierte und konzentrierte Gestaltung ist die grosse Kunst ... An [einem] Motor kann es keine schwache Stelle geben ... nichts Unklares ... kein Sentiment, sonst würde das Ding sofort in die Luft fliegen. Solch Werkzeug der potenziertesten Kraft ist klar und logisch konzipiert, eine Einheit, innerhalb derer es keinerlei Zufälligkeit und keinerlei Willkür gibt ... eine Zurückführung jedes einzelnen Elementes auf die Urform. Ein Bild ... ist selbstverständlich nicht dasselbe wie ein Motor; aber es ist auch ein Organismus, auf seine Art auch eine Quelle konzentrierter Energie.... Auch der Künstler muss zu den Urformen gelangen, das ist die Lehre des Cézanne von Kubus, Konus und Zylinder. Aus den Gedankengängen heraus lehnt man jetzt in Frankreich alles ab, was nicht klare Ordnung, sachliche Bestimmtheit, organisierte Arbeit ist.⁸⁸

Significant here is not only the references to Cézanne's solids employing the Goethean term "Urform," and his usage of the term "Sachlichkeit," but also the fact that while he employs both mechanical and organic metaphors in his discussion of the artwork, unlike the Purists, he finally comes out on the side of the organic alternative.⁸⁹ The contrast between the Purist position and his own organicism is put into high relief a year later, in the January issue of the 1923 volume of *Das Kunstblatt*.

The issue's lead article consists of a series of telegraph-style statements by Fernand Léger which build up to constitute the artist's aesthetic credo of the time, one which can be characterised by the statement "Herrschaft der Maschine, ihre Perfektion...."⁹⁰ Despite the Purist inspiration, it is characteristic that in the German context Westheim should call on the authority of "nature" rather than geometry, mathematics or the machine *tout court*, to support his reform program. To this end, he followed Léger's credo with the central organic-functionalist thesis of Raoul Francé's 1920 book *Die Pflanze als Erfinder* (itself a popular edition and further development of Francé's book *Die technischen Leistungen der*

Pflanze), expressing the hope, "vielleicht hilft solche Erkenntnis unseren ästhetischen Diskussionen vereinfachen und -- versachlichen."⁹¹ (Fig. 4-3)

Westheim begins his introductory blurb by invoking Cézanne's *Urformen* again, pointing out that while "Cézanne[s] ... Lehrsatz von 'Kubus, Konus und Cylinder' ... eine Revolution für die Kunstwelt [bedeutete] ... für andere, die die Natur bewusst zu ergründen versuchen, für Techniker und Naturwissenschaftler, wäre dieser revolutorische Satz des Cézanne vermutlich eine -- Selbstverständlichkeit gewesen." The excerpt began with Francé's functionalist-determinist creed:

All must have its best form, its 'optimum' which is also its nature.... There is for everything, be it a concrete thing or a thought, only one form which corresponds to the nature of that thing... Like [cuneiform] writing upon rock, the fundamental knowledge about form and function is engraved in our brain,,,.⁹²

While there is a long history of organic-functionalist theory in the West going back through Ruskin, Pugin, Greenough, Coleridge, Emerson, Goethe and Alberti to Aristotle, Francé's restatement of Louis Sullivan's well-known "form follows function" adage was a particularly radical one, and was powerful to *Das Kunstblatt's* readership because in an age when Positivist science was the world power among *Weltanschauungen*, it derived from a biologist rather than an artist, architect or aesthetic theorist.⁹³

Francé maintained the unitary nature of technology: all *Technik*, including that found in nature and that produced by humans, is part of the same universal natural system of perceived "nature": the *Bios*. Francé maintained, furthermore, that the *Bios* is built up of combinations of seven basic geometric forms, or *Grundformen*: crystals, spheres, planes, rods, ribbons, spirals, and cones.⁹⁴ "There are only seven fundamental technical forms! They are the basis of architecture, of the parts of an engine, of crystallography and chemistry, geography and astronomy, of art, of industry -- of the

whole world. And the world teeming with life has produced no other possible forms."⁹⁵ Of these fundamental forms, Francé named the spiral as the most efficient way to counter resistance in movement (Fig. 4-4):

The shape of the screw is adopted by everything which has the function of boring and squeezing through... We ourselves, did not invent the screw ... The natural law -- deeply embedded in the structure of the world -- stands behind all these occurrences: spiral movement occurs with less expenditure of energy than movement in a straight line.⁹⁶

It is not surprising that in the case of artists fascinated with dynamism such as Moholy-Nagy and El Lissitzky, this constataion should meet with a particular resonance. Indeed, it is telling that Moholy-Nagy incorporates -- with the possible exception of the cone -- Francé's *Grundformen* into his *Lichtrequisit einer elektrischen Bühne*, his famous "Light-Space Modulator": the crystal (here as glass), the sphere, the plane, the rod, the strip and the spiral.⁹⁷ (Fig. 4-5) Since both natural and human technologies are rooted in the *Bios*, the prototypes of human technologies, for example the turbine, are to be found in nature: "No technical form exists which cannot be traced to the forms of nature."⁹⁸ (Fig. 4-6) Humans, furthermore, had much to learn from organic technology and they stood to profit from its adaptation to their purposes, a process Francé termed *Biotechnik*.⁹⁹ If human technology is a subset of the greater category of technology, furthermore, then our technology is not something foreign to or necessarily harmful to ecosystems: as long as it contributes to the equilibrium of the ecosystem within which it is located, it is to be valued rather than abjured. Harmoniously integrated into its surroundings, technology was a Good Thing rather than Evil (or *Geist*) incarnate. Significantly, Westheim ended the Francé excerpt with an unmistakable statement of Monist biocentrism, a dose of *kosmische Einheitsgefühl* illustrated by means of the *topos* of self-similarity:

Swedenborg conceived the startling idea for his

generation that the world is a great unity. He pictured it as an eternal flowing of the same things, a return of similar laws, only in different intensities; at one time concealed in small things, in another returning with giants steps to construct ... mountains, to write with starry script upon the heavens, or to assume spiritual shape and become feeling in man's brain and heart.¹⁰⁰

It is not difficult to see the attraction that this biocentric legitimation of emergent Constructivist style, and of the generally waxing technophilia, carried for avant-garde practitioners in Germany, raised on *Naturromantik* and the *Jugendbewegung*, and harbouring a deep-seated love of "nature" as a consequence.

While versions of some of these ideas were published in 1917 by D'Arcy Wentworth Thompson in his book *On Growth and Form*,¹⁰¹ Thompson's publication could not have been available in Germany at the time because of the war and its aftermath, and it seems to have been this text by Francé that stimulated Lissitzky, Hausmann, Moholy, Mies, Siegfried Ebeling and Hannes Meyer to seek out Francé's books, and to adopt -- or attack -- his ideas.

Westheim followed up the Francé excerpt with "Maschinenromantik," his lead article for the next, February 1923 issue of *Das Kunstblatt*. With its oxymoronic title, this piece was not only meant as an ironic critique of the emergent machine aesthetic; it was also an appreciation of van de Velde on his sixtieth birthday.¹⁰² Westheim warned artists that imitating the outward appearance of machines was just as "academic", "formalist," indeed "romantic," as the decoration of 19th-century machinery had been, or as the use of Haeckel's *Kunstformen der Natur* by turn-of-the-century artists as a pattern-book, had been¹⁰³:

Es hat grosse Künstler gegeben, die sich nie genug tun konnten im Studium der Natur, möglich, dass der grosse Künstler von Morgen mit der gleichen Unermüdllichkeit die sinnvoll lebendige Organik technischer Konstruktionsformen studieren wird. Nicht der Formen, sondern der Organik wegen, durch die solche Ma-

schinerie lebendig ist wie ein Geschöpf der Natur.¹⁰⁴

With this, opposed to the Purists, Westheim states his Francéan position that machinery is organic, and that to be organic -- as van de Velde held -- it is the *Sachlichkeit* of machinery and natural forms that the artist must reproduce in the very process of working rather than their outward forms.¹⁰⁵ This, as Westheim knew, was the working method Klee was promoting through his teaching. Indeed, possibly by the fall of 1923 Klee taught with photographs of shells.¹⁰⁶ (Fig. 4-7)

c. Of Spirals and Shells

Képarchitektúra sees an endless spiral even in a straight line. (Kassák 1921)¹⁰⁷

...wij willen het onkenbare, kenbaar maken, ... wij willen de oneindigheid van den kosmos cristalliseeren en in een idee voor u te vertalen! Zoo is het gekomen, dat wij ... naar de realiseering dezer nieuwe wereld, staren naar de natuur en duiken in de diepste der oceanen en grijpen wat daar spanning en innerlijke kracht in sich draagt en brengen aan de oppervlakte, huizen en kluizen die in het water zwemmen, ... die geen gevels hebben en geen daken, ... maar, die in zich dragen de spanningen der gebogen velden, de rechte en strakke banden, de ... spiralen; die kennen vorm, van de edelste lijn in de volste massa, ... die één zijn in innerlijke kracht, één zijn in het alomvatten ... één in organisch geheel! (Wijdeveld 1923)¹⁰⁸

Francé's discussion of the spiral as the path of least resistance in nature, that is of this form as the most functional method of movement through any medium, was both an early indicator, and an instigator of the fashion for spiral form -- especially as manifested in shell growth -- discernable in Central and Eastern European avant-garde circles at the time.¹⁰⁹ We have noted Tatlin's celebrated use of this form in his 1919-20 *Monument to the Third International*. Lajos Kassák's statement in his proto-Constructivist, September 1921 "Képarchitektúra" [architecture of the picture] manifesto is another early sign of this interest, as is Moholy-Nagy's

Nikkelplastik mit Spiral of about the same time, and his *Dynamisch-konstruktives Kraftsystem* of 1922-1928.¹¹⁰

While, as far as can be determined, books by Francé do not remain in Klee's library, there are parallels between their approaches to the understanding of nature. Klee's pedagogical notes indicate that his teachings on spiral growth patterns began around 1922, just before Francé's writings broke into the avant-garde scene in Germany. But the fact that *Die Pflanze als Erfinder* had appeared in 1920 already, and that Francé was wintering in Weimar during the early twenties, suggests that some interchange could have happened. Of course Klee had always been interested in natural forms and processes, and he might have garnered relevant information from other sources, as well as from his own observations. In March of 1922 Klee wrote on spiral growth patterns, and that same July, like Francé, he described the spiral as the "reinste Bewegungsform."¹¹¹ While we cannot be certain that Klee read Francé's text in *Das Kunstblatt*, the fact that he made notes on growth, particularly spiral growth, during the fall of 1923, raises the possibility that he might have seen it. On 23 October Klee wrote of growth as "Fortbewegung der Materie durch Neubildung zu Stehenbleibendem hinzu. Bewegung im irdischen Bereich erfordert Energie," invoking not only the idea of growth as a translation of energy into matter, but of stages of dynamic equilibrium, just as Francé did.¹¹² On 5 November Klee wrote of the growth of plants as directed by purely functional needs: "Die ganze Form resultiert auf einer Basis, der Basis aus innerer Notwendigkeit. Es liegt Bedarf zugrunde. Es ist kein eitles Spiel gegeben mit Resultaten, sondern ein aktiver notwendiger Weg zur Form."¹¹³ Later that same month Klee invoked the *élan vital* in his discussion of shell growth: "It is the energy-charged creative force that forms the basic life content... This force stands revealed in its functions, it derives its living form by permeating matter. It invests matter with life, sets it in motion by a defi-

nite order, by definite rhythms.... The particles are placed in resonant relation with the primal force."¹⁴ Significantly, "in the twenties" Klee assembled a "collection of pictures cross-sections and x-rays of mollusks" which, while I have not been able to examine them first-hand, seem to have been from or very like those in the "Schelpennummer" of *Wendingen*.¹⁵

It may indeed be more than coincidental that it was in the fall of 1923 that the epoch's most influential images of spiral form in nature appeared in the "Schelpennummer" of the Hague art journal *Wendingen*, the "expressionist" and organicist -- indeed biocentric -- rival to *De Stijl* designed and edited by the biocentric architect H. Theo Wijdeveld.¹⁶

(Fig. 4-8) Contained in this issue were a series of radiographs of nautilus shells in the collection of the Amsterdam Zoological Museum by J. B. Polak of that institution, and "straight" photographs of them by *Wendingen's* house photographer Bernard Eilers. (Figs. 4-9, 4-10, 4-11, 4-12)

Accompanying these images was an introduction by the organicist architect Roland Holst entitled "Schelpen. De Wondervormen der Zee, Vreemde Gelijknissen," which played on the biological analogy between shells as products of the animal, and architecture as a human organic product. Also included was Wijdeveld's "Natuur, Bouwkunst en Techniek," a biocentric text expounding the all-embracing power of nature and our part in it.¹⁷ In a move calculated to counter van Doesburg's anti-natural position of the time, this article -- suffused with *Vitalmystik*, and based on a psychobiological view of human nature and inspiration, called on architects to learn from the beauty and economy of nature:

Door dit boek ruischt de muziek der oceanen; ... hier zijn gevoelige wezens, die leven, in trillende vollbewegingen, de ziel, het nutteloos geworden huis, den mensch in millioenen voorbeelden op de stranden voor te toveren. Opgewoeld uit de diepste wateren, gevonden aan de verste stranden, voelen we in de wonderen dezer molusken, een harmonie tusschen de vormen der natuur en de vormen der kunst. Beiden

groeien volgens diep inwendige wetten, beiden onstaan in eenheid en hebben tot bron een innerlijke harmonie.¹¹⁸

In the context produced by the texts, the images were made to function as models for human technology, and as signifiers for *kosmovitale Einsfühlung*, of a Monistic creed of the unity and harmony of nature. Wijdeveld echoes Francé's theorizing about human technology as both an aspect of natural technology, but also as standing to benefit from the imitation of it, ideas published earlier that same year in *Das Kunstblatt*:

Sluit uw oogen en grijp met den drang tot scheppen om u heen, vorm ruimten die uw innerlijk bewegend vóórspiegelt, componeer de vormen met de nieuwste mogelijkhedenden techniek, grijp met volle accoorden in uw ziele-instrumenten, maar hoe ge dringt en wringt, steeds komen er gelijkenissen met de vormen der natuur, zou het sublieme in de kunst één zijn met de natuur, zou de synthese voor beide dezelfde zijn, is er een geheim verbond tusschen beiden, dringt d'een, d'ander voorwaards.... Daarom is dit boek, gewijd aan die schelpen der zee, opgedragen aan den ingenieur en den architect, den modernen mensch.¹¹⁹

This issue of *Wendingen* captured the imagination of European avant-gardists involved in the discourse around nature and technology, calling to their attention not only the beauty and economy of natural structures, but also the power and creative potential of scientific imaging technologies. Not since Eder and Valenta's album of 1896, produced soon after the development of x-ray photography by Wilhelm Conrad Röntgen, had such beautiful X-ray images been published in an album format, but Eder and Valenta's album was a rarity, while *Wendingen* had a fairly wide distribution, especially in central European avant-garde artistic circles.¹²⁰ By 1925 its images had reappeared in publications by El Lissitzky, Moholy-Nagy and Le Corbusier, and the issue had made an impression on key critics such as Behne and Kállai.¹²¹ In 1934 even Lewis Mumford had reproduced a Polak radiogram in his book *Technics and Civilization*.¹²² (Figs. 4-13, 4-14, 4-15, 4-16, 4-17)

While the "Schelpennummer" and the December 1924 issue of *Wendungen* devoted to crystals were the only ones to feature "natural" rather than artistic material, their publication is not surprising given that Wijdeveld's journal was devoted predominantly to the "organic" tradition in architecture.¹²³

The "Schelpennummer" is the earliest publication distributed in Weimar German artistic circles I am aware of in which photographs employing a technology normally used by scientists were produced with biocentric aesthetic intentions and presented in an artistic context.¹²⁴ As we shall see in Chapter Five, these factors were crucial in inspiring Moholy-Nagy to effect a biocentric aestheticization of scientific photography after 1924.

While Collins' is a useful schematization, I wish to complicate its application to the early 1920s by incorporating Francé's biocentrism. As I have indicated in relation to the Bauhaus, and as suggested by Westheim in his introduction to the Francé excerpt, the general shift towards *Sachlichkeit* in German avant-garde culture during the early 1920s was spurred by, indeed was in part a response to Francé's "Objektiv," in other words *sachlich* internal reform of Monism. An important component of the resulting cultural developments is what could be termed (adapting Lodder's and Elderfield's terms) "biocentric Constructivism."¹²⁵ In the remainder of this chapter I will detail Francé's role in inspiring the "biocentric Constructivist discourse" among participants in the "Constructivist International." It was out of this discourse, engaged in by Moholy, Lissitzky, Mies, Kurt Schwitters, Ebeling, Hannes Meyer, Hausmann and Kállai, that Moholy's conception of New Vision emerged. New Vision, I will argue, was above all else a biocentric vision of the world.

2. Francé and the Biocentric Constructivist Discourse

Die vitale Konstruktivität ist die Erscheinungsform des Lebens und das Prinzip aller menschlichen und Kosmischen Entfaltungen.... Deshalb müssen wir an die Stelle des *statischen* Prinzips der *klassischen Kunst* das *Dynamische* des universellen Lebens setzen. (Moholy-Nagy and Kemény 1922)¹²⁶

Constructivism can be neither proletarian nor capitalist -- it is the crystallized product of our general affective viewpoints -- in it we have discovered the *Urform* -- the pure form -- the organicism of nature -- this form is classless and cannot be subjected to tendentious force. (Egon Engelen 1923)¹²⁷

Wie Francé richtig sagte, gibt es in der kompliziertesten Industrie keinen Vorgang, der nicht längst im Menschen- und Tierleben oder in den Pflanzen ohne Unterbrechung in Betrieb wäre. (Fuhrmann 1923)¹²⁸

Constructivism: These artists look of the world through the prisma of technic... The shortsighted see therein only the machine. (Arp and El Lissitzky 1924)¹²⁹

Be quite sure you buy the book by Francé called *Bios*, I should very much like to make personal contact with him. We must find out his address without fail. When *Nasci* is finished, I will send him a copy with a dedication. (El Lissitzky 1924)¹³⁰

Das Verständnis für die ganze moderne Kunst, vom Impressionismus über Futurismus, Expressionismus, Kubismus bis zum Konstruktivismus wird durch die sich jetzt nach und nach herauskristallisierende Grundidee: alle Arbeit nach ihrer Funktion in der selbstverständlichen organischen Form der Vollendung erschlossen. (Moholy-Nagy 1925)¹³¹

Biology, psychoanalysis, relativity and entomology are common intellectual property: Francé, Einstein, Freud and Fabre are the saints of this latterday. (Meyer 1926)¹³²

...[Dass] das treffliche Buch von Raoul Francé 'Technische Leistungen der Pflanzen' ... von der Architekturwissenschaft der Zukunft grössere Beachtung finden wird. (Ebeling 1926)¹³³

ich kenne z.B. auch das reizende kleine Buchlein von R. H. Francé 'Die Pflanze als Erfinder', in dem der Verfasser nachweist, dass der Mensch durch genaues Studium der Natur viel einfacher auf viele Erfindungen hätte kommen können. (Rietzler 1927)¹³⁴

Neuerdings hat man ... festgestellt, dass unsere ... schönsten Apparate, Flugzeuge, Autos usw. ganz ohne Willen und Zutun des Ingenieurs und Technikers an wenig beachtete Naturformen anklingen: an die Gestalt von Fischen, Vögeln, Insekten und Muscheln, an alle äusseren Panzer- und Krustenformen der organischen Natur, die der fleischlichen Leiblichkeit des Menschen sehr fern, seiner Einfühlung kaum zugänglich sind. ... So fand also auch das indirekte, abstrakte, naturferne Gestalten der beginnenden Stahlzeit doch noch einen Weg zur Natur zurück, wäre selbst ein neuer biologischer Ausdruck, der in uns selbst in unserer künstlichsten bewusstesten Anstrengung wirkenden Natur? ... [D]ie abstrakte Malerei die objektiv gegebenen Naturgestalt, die sie auf der einen Seite ausgetrieben hat, auf der anderen Seite wieder hereinzulassen scheint. Diese Künstler ehren die Natur ... sie möchten sie am liebsten erfassen wie einem kühnen Ingenieur des Lebens, der aus eigenem, keineswegs im Menschen vollendetem Gesetz gestaltet. (Hartlaub 1927)¹³⁵

das grundgesetz: auf allen gebieten ... bemüht man sich heute, reine funktionelle lösungen technisch-biologischer art zu finden: ein jedes werkstück eindeutig aus den elementen aufzubauen, die zu seiner funktion erforderlich sind. (Moholy-Nagy 1928)¹³⁶

eine intensität des ausdrucks zu produzieren ... erfordert unser ganzes bios und nicht nur eine spezifische erkenntnisstufe. (Moholy-Nagy 1928)¹³⁷

Technoromantik. (Kállai 1931)¹³⁸

Raoul Francé's bio-technique, which we shall teach in the New Bauhaus, is an attempt at a new science which shows how natural forms and designs can be translated without great difficulty into human production.... I visited the east coast this summer and I was most amazed to see a little animal ... the horseshoe crab. This very thin prehistoric animal shell is constructed in such a wonderful and economical way that we could immediately adapt it to a fine bakelite or other moulded plastic form. (Moholy-Nagy 1937)¹³⁹

While El Lissitzky was actively seeking contact with Francé early in 1924 and he and Arp -- as well as Mies and Egon Engelen -- were countering the view that Constructivism was a purely technocentric phenomenon,¹⁴⁰ by 1926 the Swiss International Constructivist architect Hannes Meyer was listing Francé with some of the great figures of the early 20th-century mytho-scientific imagination. The following year, in his retrospective musings on Constructivism, Gustav Hartlaub, curator of the "Neue Sachlichkeit" show, was among the first critics to articulate a recognition of the way in which "nature" was "allowed back" into abstract art. Kállai, who already in his Constructivist writings modelled the nature/technology split as a dialectic rather than as an either/or choice, eventually came to analyze Constructivism itself from a biocentric position, referring -- as we have seen in Chapter One -- to a "constructive" or "technoid drive" when referring to the art which expressed, as he put it, "the profane Trinity rationalism-materialism-utilitarianism."¹⁴¹

Evident in Moholy's *Malerei, Photographie, Film* of 1925, Francé's influence was determinant by 1929 when Moholy's pedagogical treatise, *Von Material zu Architektur*, appeared. Though the recognition of Francé's importance was implicit or explicit in these texts of the 20s, it was not until the late 80s that -- in a footnote -- the Swiss architectural historian Stanislaus von Moos would write that Francé was "probably the most important inspiration for most European avant-garde artists and architects intrigued by the analogies of natural and technical form."¹⁴²

a. Hausmann's Anarchist Biocentrism

Die Natur ist eine schöne Sache... aber ... in diesem Deutschland gibt ... es nur eine ... Natur, eine dicke Natur, eine Bertha-Natur -- die bürgerliche Gesellschaft. Kein Klassenkampf, kein Kommunismus, nichts -- nur eine reine, unerhört stark Bürgernatur. (Hausmann, "Manifest der Natur" 1921)¹⁴³

Warum wächst und gedeiht ein Lindenblatt? Weil es die Idee des Lindenblatts gibt. ... Welche Klassenkampf spielen sich ab im Chlorophyll, von dem und von denen wir nichts ahnen -- und ... ist denn die Gothik oder der moderne Tiefbau nicht sich und dem Lindenblatt ähnlich? (Hausmann c. 1922)¹⁴⁴

Shortly after the publication of Francé's chapter in *Das Kunstblatt*, Hausmann's and Viking Eggeling's "Zweite Präsen-istische Deklaration" appeared in *Ma*.¹⁴⁵ This was a critique of mechanistic Constructivism -- of the engineer as a model for the artist -- and of a Communist conception of Constructivism as a way of producing art for the proletariat. Hausmann and Eggeling declared instead, "Unser Aufgabe ist es, im Sinne einer universalen Verbindlichkeit an den physikalischen und physiologischen Problemen der Natur und des Menschen zu arbeiten," an attempt at a biocentric reorientation of International Constructivist activity based on Ernst Marcus' radical, ontological version of Empiriocritical epistemology.¹⁴⁶ Such was the suggestive strength of Hausmann's personality that he in turn interested those artists around him -- Arp, Puni, Moholy-Nagy, Péri, Kemény -- concerned with the cosmic positioning of humanity, in an "elemental" Constructivism which took the life-force and other cosmic forces into account in their work.

While advocating an anti-mechanistic Constructivism, as discussed in Chapter Two, Hausmann was the only one of his fellows to note the totalizing political implications of Francé's biologism, that Francé "sich für einen Führer und Lehrer der Menschen in einem menschlichen Sinne ausgibt oder vielleicht wirklich hält." Hausmann, whom we have seen had been interested in Haeckelian Monism and Kropotkinian Anarchism, launched an Anarchist attack on Francé and his book *Die Kultur von Morgen* in July of 1923 from within the biocentric discourse, in the Activist journal *Die Aktion*.¹⁴⁷ He correctly saw that Francé's philosophy was inherently conservative politically, that if any system -- for example the extant

"bourgeois" Capitalist order which Hausmann hated -- could be labelled as being "in harmony" as an ecosystem, then the upsetting of that harmony was to be avoided.¹⁴⁸ Hausmann, a fierce critic of mechanistic Newtonian science, summarized his attack on Francé with the worst accusation he could level, "Kurz: Francé 'vermenschlicht' die Gesetze der Welt und des Lebens etwa so, wie die gesamte Wissenschaft dies auch tat." In this article and in his next publication in *Die Aktion*, Hausmann attacked Spengler and Nietzsche, and characterized Hitler as "nur ein nebensächlicher Faktor" beside figures such as Francé who represents the

humanistisch-wissenschaftliche ... Seite des Nationalsozialismus.... Francé als Khung-Tseu- und Schopenhauer-'Vollender' [and the Nietzschean-Christian pop-philosopher L. C. Häusser] sind in der Tat nichts anderes als die sich selbst für Genies, für Gipfel erklärenden Durchschnittsbürger, die ... zuviel und zu wenig wissen, um sich nicht zwangsläufig als Führer ... zu fühlen und anzubieten ... Volkskaiser zu werden.¹⁴⁹

But in a typically Anarchist mode, he also lashed out at Karl Radek and his German Socialists, as well as at the entire Moscow leadership of the "russische Zentralismus," including Trotsky, and presumably Lenin, for their statism.¹⁵⁰ Of course, Francé -- like Hausmann -- did not regard the extant social system as harmonious. Except Francé called for a revival of the "organic" German culture of the past, which he saw as a "racially pure" "Gothic" culture of the "forest" instead of the current order -- needless to say, not the alternative Hausmann had in mind, but -- from our perspective -- an early version of the state Hitler attempted to build after 1933. While Hausmann was incorrect about Hitler being a marginal figure next to Francé, he did foresee Francé's later association with the National Socialists. In a subversive and critical gesture, in July of 1923 -- around the time Francé's book *Plasmatik* appeared -- Hausmann published his "simultaneous poem" "Chaoplasma" in *Merz*.¹⁵¹

It was an interesting twist, however, that in "Ausblick," published in the third issue of *G* in 1924, Hausmann criticized Francé (though without naming him directly) for not going far enough in his biocentrism, that is, for not extending the *Biocönose* concept to the cosmic realm, as did Hans Hörbiger in his *Welteislehre*.¹⁵² Ironically it was Hörbiger's highly speculative astro-physical *Welteislehre* which the Nazis -- particularly Hitler -- later favoured over any aspect of Francé's *objektive Philosophie*.¹⁵³ Hausmann also renewed his call for a revolutionary interpretation of biocentric thinking in "Ausblick," over Francé's socially conservative views, seeing Hörbiger's theory as a means to effect such an activist biocentrism:

Wir müssen nicht zur Harmonie mit unserer Gesamtsituation kommen, wir müssen zum Organgedanken vorstossen. Wir können und müssen die Biozönose umformen wenn wir das organische Denken und die daraus entspringende Tat und Tatsächlichkeit ernstlich in das Mileu, in das Gesamtmiterlebensgebiet hineintragen oder besser aus ihm herausarbeiten. Dies erfordert organische Arbeit. Einer der Wege hierzu ist die Welteislehre H. Hörbiger.¹⁵⁴

Despite the ironies of Hausmann's adherence to Hörbiger's *Welteislehre*, he was the only one of the biocentric avant-gardists to engage in a political critique of Francé's position. And it is notable that none of the Francé-fans, including Hausmann's friend Moholy-Nagy, listened to him in this respect.

b. *G* and Mies

Mies van der Rohe occupied a position on the opposite end of the political spectrum of Biocentrism from Hausmann. As we have seen, the first issue of *G* appeared in July 1923. Francé's name is not mentioned on its pages, which is not surprising given that -- since Graeff had attended van Doesburg's de Stijl seminar in Weimar the previous year -- the magazine was produced under the direct influence of the "anti-natural"

Dutchman.¹⁵⁵ Still, Hausmann's critique employing Francéan terminology in "Ausblick" is not the only evidence of awareness of Francé's writing in *G*. Statements such as Graeff's "Die Form soll nie Ziel sein, sondern ist sozusagen Nebenerscheinung an dem nach Maasgabe der Funktionen vor allem," are close to Francé's sentences published in *Das Kunstblatt* earlier that year, and were, in any case, of a functionalist-determinist nature not typical of van Doesburg. Even the other Weimar "De Stijl Course" alumnus Egon Engelen was writing of the *Urform* and of the "organicism of nature" in his International Constructivist text of 1923 published in *Ma* and misattributed to Moholy-Nagy.¹⁵⁶ Mies van der Rohe's article in the September 1923 issue of *G* was similarly informed by Francé's thought: "Wir kennen kein Form-, sondern nur Bauprobleme. Die Form ist nicht das Ziel, sondern das Resultat unserer Arbeit. Es gibt keine Form an sich. Das wirklich Formvolle ist bedingt, mit der Aufgabe verwachsen, ja der elementarste Ausdruck ihrer Lösung."¹⁵⁷ Statements Mies made in a letter written that same month express the same thoughts,¹⁵⁸ as did a letter to Walter Rietzler, founding editor of the Werkbund's postwar, organicist journal *Die Form* [Berlin 1922-1933], concerning the journal's title: "Geben sie dem Blatt einen anderen Titel... Liegt in dem Titel 'Die Form' nicht ein allzugrosser Anspruch? ... Verpflichtet er nicht in einer falschen Richtung? ... Ist die Form wirklich ein Ziel? Ist sie nicht vielmehr das Ergebnis eines Gestaltungsprozesses? Ist nicht der Prozess das Wesentliche?"¹⁵⁹ Mies may first have encountered Francé's thought through Karl Ernst Osthaus' "biosophical" employee Ernst Fuhrmann, who though -- like Hausmann -- was an Anarchist biocentric, was along with Paul Westheim among the first to recognize the potential importance of Francé's concept of *Biotechnik*.¹⁶⁰ The full effect that Mies' reading of Francé had on his work is as yet unknown, but as Fritz Neumeyer points out, it was probably strong. While Francé was not the first to enunciate this functionalist view,

Mies' texts are so close to Francé's that there is little doubt that the *Kunstblatt* excerpt inspired Mies in his writings of the summer of 1923.¹⁶¹ In any case, Francé's statements are a likelier source for Mies' functionalism than those Otto Wagner "made several decades earlier" and "known in prewar Werkbund circles" which Mies was not part of.¹⁶²

Indeed, Mies was a typical biocentric and a committed follower of Francé.¹⁶³ We have seen in Chapter Two that he had a standing order at Nierendorf's bookstore for Francé's books and that he amassed over forty of them. Mies' library is so rich in related literature that I have used it as an ersatz canon, a guide in my work on interwar biocentrism. The underlining of his copy of *Die Kultur von Morgen*, Francé's book which so outraged Hausmann, is an indication of Mies' adherence to a more conservative, indeed, from a Leftist perspective, politically reactionary biologicistic biocentrism. And Mies' interest in Francé was not a mere enthusiasm. Not only did he teach Francé's *Objektive Philosophie* while he was director of the Bauhaus, he continued to collect Francé's books and teach him in Chicago while he was at the Illinois Institute of Technology.¹⁶⁴ Significantly, during the early to mid-20s Mies was closely allied with Hugo Häring, the prominent "organic" architect. In fact it was out of Mies' studio that the two organized the "Ring," the cradle of German functionalist, that is *sachlich* architecture, in 1924.¹⁶⁵

c. Lissitzky's "Nasci"

The relationship between Francé's ideas and Mies' work is suggested visually in a layout in "Nasci," the special issue of Kurt Schwitters' journal *Merz*, which appeared in July of 1924 and was edited by El Lissitzky.¹⁶⁶ (Fig. 4-18) In this naturamorphic analogical spread, Mies' proposal for a tower on the Friedrichstrasse in Berlin is juxtaposed to a drawing of a human femur based on a photograph reproduced in Francé's books *Bios* and *Die technischen Leistungen der Pflanzen*.¹⁶⁷ (Figs.

4-19, 4-20) El Lissitzky set to reading Francé in 1923, probably after the appearance of the *Kunstblatt* excerpt, graduating from *Die Pflanze als Erfinder* to Francé's 1921 two-volume magnum opus *Bios, die Gesetze der Welt*.¹⁶⁸ Lissitzky was so taken by *Bios* that he accepted Schwitters' proposal to edit a special issue of *Merz*, and decided to devote it to ideas suggested by his reading of Francé. Schwitters -- whose biocentrism is another topic awaiting fuller treatment -- was eager to cooperate with Lissitzky on a project devoted to the topic of nature.¹⁶⁹ As Peter Nisbet points out, "[Nasci] reveals one of the strongest affinities between Schwitters and Lissitzky, their deep devotion to nature understood as the creative forces of organic growth and evolution."¹⁷⁰ Accordingly Lissitzky named the special issue "Nasci," Latin for "becoming" or "coming into being." Lissitzky's conception of "becoming" is not a simple Bergsonian one. It represents, rather, Lissitzky's realization that

Modern art, following a completely intuitive and obvious course, has reached the same results as modern science. Like science, it has reduced form to its basic elements, in order to reconstruct it according to the universal laws of nature... EVERY FORM IS THE FROZEN INSTANTANEOUS PICTURE OF A PROCESS. THUS A WORK IS A STOPPING-PLACE ON THE ROAD OF BECOMING AND NOT THE FIXED GOAL.¹⁷¹

This is a psychobiological epistemology characteristic of biocentrism, which holds that regardless of the system of cognition, intuition or systematic research used to attain it, knowledge is based in the deep structure of nature. In Chapter Five we will see that Kállai reiterates it in his *Bioromantik* theory. Lissitzky's psychobiology is related to Francé's psychovitalist epistemology and by quoting Francé from *Die Pflanze als Erfinder* (in capitals), Lissitzky not only acknowledges his debt to the scientist, he also underlines his adherence to Francé's functionalist-vitalist theory of form.¹⁷² When Lissitzky then writes that "The machine has not separated us from nature; through it we have discovered a new

nature never before surmised," he refers not only to Francé's organicist theory of technology but also to the types of images using advanced technological means he saw in *Wendungen*. As Elderfield writes:

What is striking about "Nasci" ... is the way in which these [organicist] propositions are combined and linked to machine-age themes to provide what is best described as an organicist vision of Elementarist theory. Modern art is compatible with modern science, not because it adopts technological principles, but because the principles common to both art and machine construction are "natural" ones.¹⁷³

"Nasci" was Lissitzky's manifesto of biocentric Constructivism. Rather than comparing art to machines, as the Purists, and after them Moholy and Lajos Kassák did in *Buch neuer Künstler*, Lissitzky compared a work by Schwitters to an aerial view of a landscape and a photograph of a plant. In another spread Lissitzky borrowed Francé's theory of *Grundformen*, and he included a photograph of a crystal, one of these forms, comparing it to his own sheet from the *Kestnermappe*. (Figs. 4-21, 4-22)

Francé's emphasis on the spiral *Grundform* as the most efficient means of moving through space also had its resonance in Lissitzky's thinking soon after he encountered it. In an article which appeared in the September 1923 issue of *G*, Lissitzky identified the screw and propeller as the technologies which -- following the foot and the wheel -- would usher in a new age of personal flight.¹⁷⁴ In "Nasci," under an illustration of Tatlin's spiral-shaped "Monument to the Third International," Lissitzky identified the spiral as the form which constitutes the best expression of our time and at once hinted at his awareness of Tatlin's own organicism. When discussing the as-yet-unrealized transition of the production of art conceived on the basis of three-dimensional space to art produced with four-dimensional space in mind in his article "K. und Pangeometrie," Lissitzky chose one of Polak's radiographs of a nautilus shell as an illustration of what the

coming four-dimensional art might resemble.¹⁷⁵ (Fig. 4-13) Not surprisingly, of the contemporary International Constructivists only El Lissitzky designed a cover for *Wendingen*, the journal's other covers of the time being carried out in a late Expressionist, decorative style.¹⁷⁶

"Nasci" is not merely Lissitzky's manifesto of biocentric Constructivism, however. It is the most forcefully articulated document of the biocentric Constructivist discourse. What is more, Lissitzky was eager for Francé's approval of his work. As we have seen, while working on "Nasci," Lissitzky expressed a desire to meet Francé, and he intended to send the scientist a copy. While I do not know whether Francé received it "Nasci" did impress avant-gardists with organicist tendencies.¹⁷⁷

d. Hannes Meyer and Switzerland

After Lissitzky had begun the production of "Nasci," he fell ill with the tuberculosis already in his body, and in early February 1924 he had to go to Switzerland to seek medical treatment. While there, he cooperated with Arp on the production of the anthology *Die Kunstismen* which, as noted above, reflected the two artists' nature-centric view of Constructivism. While in Switzerland, Lissitzky also inspired the production of the first issue of the Swiss-German avant-garde architectural and planning journal largely modeled on *G -- ABC*. *ABC* was produced by a circle of young Swiss-German architects including Alfred Roth, Hans Schmidt, Hans Wittwer, and Wittwer's partner Hannes Meyer, as well as the Dutchman then working in Zurich, Mart Stam.¹⁷⁸ Accordingly, *ABC* and Swiss architectural thinking in general began to show the effects of Lissitzky's infatuation with Francé.

In "Element und Erfindung," Lissitzky's article for the inaugural issue -- written in Locarno in February and March -- he reiterated some of his Francéan concepts. Thus, it was a shortlist of Francé's *Grundformen*, "Kubus, Konus und Kugel," rather than Le Corbusier's Platonic bodies, or Cézanne's

"Kubus, Konus und Zylinder" recently invoked by Westheim in his articles, which were promoted by Lissitzky as the most important forms of *Gestaltung*. The anti-mechanist theme was reinforced by the statement that "Die neue Gestaltung muss die alte Maschine überwinden," and Lissitzky's Francéan functionalist position was reiterated in ones such as "So entsteht die Form als Resultat der Aufgabe" and "Wir kennen keine Form an und für sich." In the last paragraph Lissitzky invokes both the *Bios* and *Biotechnik*: "Die Technik hat unter dem Hochdruck des sich *umbildenden Lebens* den Weg der Element-Erfindung eingeschlagen.... Die Erfindung ist die *biomechanische Kraft*, die alles zur Überwindung der Hindernisse auf ihrem Wege nach Vorwärts antreibt."¹⁷⁹

In the following issue of *ABC*, the naturamorphic analogies Lissitzky included in "Nasci" inspired the journal's editor, Alfred Roth's "Gestalten-Form," which included a photograph of dandelions accompanied by a Francéan functionalist-determinist text. Roth also published an organicist lecture given in Paris by Roland Holst, who had co-produced the "Schelpennummer" of *Wendungen*.¹⁸⁰ Roth's analogy was referred to in Mart Stam's series "Modernes Bauen," an organicist architectural design theory in which -- reiterating the Francéan theme treated by Lissitzky in "Nasci" -- Stam defined the process of design psychobiologically as the "conscious" version of the same functionalist process which occurs "unconsciously" in nature: "Die moderne Kunst wird sich der Elemente der Natur bewusst bedienen, sie wird also nicht gegen die Natur handeln," and "Der Wuchs von Pflanze und Tier zeigt uns die äusserste Ökonomie der Materialverwendung."¹⁸¹

In an issue of *ABC* guest-edited by Hannes Meyer, and devoted to avant-garde art, Moholy-Nagy's article "Ismus oder Kunst?" clarified his Francéan-biocentric theory of artistic creativity: "Die Ismen sind Anstrengungen zur Überwindung der traditionellen Bilderform. Sie sind Wegbereiter zu einer rein funktionellen Gestaltung, deren elementare Ausdrucksmittel den

durch unseren Organismus bedingten, in uns latenten Spannungsbeziehungen entsprechen." Just as Lissitzky had declared his art to be a "limb of nature" in "Nasci," the excerpts from a letter Lissitzky sent from Russia published in this same issue of ABC discussed the "elementary plastic" components of his PROUN art as equivalent to the elements of nature.¹⁸² As demonstrated by this issue he edited, Meyer was interested in questions of organicism in art and architecture.

Indeed, as much as, and perhaps to an even greater extent than Mies, Hannes Meyer has been misrepresented in the literature. Like others who participated in the biocentric Constructivist discourse, Meyer was a committed Leftist and an ardent functionalist and rationalist, and like some of the others, he was a *biologistic* functionalist, and a proponent of Francé's biotechnics with a keen interest in psychology and the natural sciences.¹⁸³ To my knowledge, the only historian to note this is Stefan Kraus, who writes that "Hannes Meyer ist der Architekt am Bauhaus, der die soziale Frage des Wohnens mit biologischen, psychologischen und ökologischen Überlegungen und der Utopie einer sozialistischen Gesellschaft verband."¹⁸⁴ That it was through Lissitzky and his work in Switzerland that Meyer came to know Francé's work is likely given that, according to K. Michael Hays, El Lissitzky and Le Corbusier affected Meyer's development the most.¹⁸⁵

Not surprisingly, Meyer had roots in the *Reformbewegung*. He was, e.g., heavily influenced by the English town planning tradition, especially the Garden City movement, which he had encountered while on an extended stay in England in 1912-13.¹⁸⁶ That the origins of Meyer's biocentrism are to be located in his English experience is indicated by a former student who remembers that Meyer assigned as reading not only the writings of Lewis Mumford, but of Mumford's mentor, the Scottish biocentric-Anarchist theorist of an organic approach to understanding cities, Patrick Geddes, who also exercised an influence on Häring at the time.¹⁸⁷ A tangible result of Mey-

er's interest in the Garden City was the realization of his plan for the cooperative housing estate "Freidorf" near Basel in 1919-21, a project related to Hellerau, centre of the *Reformbewegung*, as much as it was to the English examples.¹⁸⁸ In the mid-twenties Meyer went through an International Constructivist phase, producing not only orthogonal-minimalist-style "functionalist" building designs, but also geometrical-abstract graphic art and photographs.¹⁸⁹ The central document of this period is the manifesto "Die neue Welt" of 1926.¹⁹⁰ Though characterized by an unbridled optimism in a technologized Socialist utopian future as well as a declared anti-aesthetic, "functionalist" approach to design -- while practicing the geometrical-abstract aesthetic typical of International Constructivism -- this text is also marked by the fascination with nature, biology and biological processes, and the biological determinism, characteristic of other biocentric Constructivists influenced by Francé.¹⁹¹ Indeed, Meyer was so enamoured with Francé's thought, that, as we have seen at the start of this segment, he placed Francé first on a shortlist of "latterday saints" which, besides Francé, included only Einstein, Freud and the famous French entomologist Henri Fabre.¹⁹² While it is unclear whether these scientists would have appreciated the Mormon metaphor, as shall be discussed in Chapter Five, when Meyer assumed the directorship of the Bauhaus in 1928, he promoted various biocentric views, including those of Ludwig Klages.

e. Ebeling and the Bauhaus

I have suggested that the Glass Chain architects progressed from a biomorphic expression of their biocentrism during the teens to an orthogonal Modernist one in the "Ring" after Mies encountered the writings of Francé. I have also shown how Swiss-German architectural thinking was affected by Francé through Lissitzky's transmission of his ideas. As in the case of the "Ring," at the Bauhaus, Francé's influence was

direct. While we do not know exactly when Moholy-Nagy began teaching Francé's concepts of *Biotechnik* and the seven *technischen Grundformen* in his *Grundlehre* at the Bauhaus, we do know from his pedagogical treatise *Von Material zu Architektur*, that he taught them there between 1923 and 1928.¹⁹³ For his part, Gropius continued to make organic-functionalist statements during the mid-twenties. In "Bauhaus-Dessau -- Principles of Bauhaus Production" of 1926, for example, Gropius "resolutely affirms" "the living environment of machines and vehicles" and calls for "the organic design of things based on their own present-day laws" -- a typically Francéan organicization of the technical.¹⁹⁴ Moholy-Nagy, meanwhile, expressed a biologicistic view of the experience of space in *bauhaus*, the school's journal, of which he was the editor: like all sensory experience, for Moholy "raumerlebnis ist kein privileg begabter menschen, sondern biologische funktion."¹⁹⁵

Siegfried Ebeling entered the Bauhaus as a student in 1924 remaining -- off and on -- until late 1926, and it might well have been in Moholy's introductory class that he encountered Francé's writings.¹⁹⁶ While Ebeling's prediction concerning Francé's *Die technischen Leistungen der Pflanzen* quoted above did not come to pass, it does indicate the fashion for Francé's ideas at the school. Ebeling's reformulation of Le Corbusier's dictum that "the house is a machine for living in" as "Hausorganismus," may well have inspired Gropius to write that "das wohnhaus ist ein betriebstechnischer organismus, dessen einheit sich aus vielen einzelfunktionen organisch zusammensetzt."¹⁹⁷

Like many in the *Reformbewegung*, Ebeling was interested in the rhythms of nature. In fact though he had studied philosophy, theology, art history and archaeology early on -- like others concerned with the expression of such rhythms in their lives (Raoul Hausmann for example) -- he was a dancer, and he wrote on both dance and architecture during his career.¹⁹⁸ Two of his sources in this connection would have been the

discipline of Eurythmics, which he would have encountered through his interest in Anthroposophy, and Ludwig Klages, whose writings on the fundamental pendulations of nature were well-known in Weimar Germany, and are reflected in Ebeling's statement that "es ist alles nur rythmischer Antagonismus gleichgeordneter Prinzipien, die in der 'Natur' als solcher begründet sind."¹⁹⁹ Wulf Herzogenrath detects the influence of Itten's protégée, the Weimar Bauhaus "Harmonisierungsübung" instructor Gertrud Grunow, on Ebeling's ideas.²⁰⁰ After the Bauhaus Ebeling headed for Dornach, Anthroposophy's headquarters, and he worked with the Swiss-based Austro-Hungarian modern dance pioneer Rudolf von Laban in Berlin. Ebeling's biocentrism is evident from a 1927 article on dance that discusses the "Totalität des Organischen Lebens die uns noch mit Tier und Pflanze aufs Engste verbindet."²⁰¹

As Herzogenrath has observed, Ebeling's awareness of the architecture of the Glass Chain is suggested by "Kosmologie Raumzellen," the article he published at the Bauhaus in the November 1924 issue of *Junge Menschen*, in which he speculated on the manner in which an awareness of the forces of the cosmos could be integrated into architectural practice. Ebeling continued to develop these utopian architectural views after encountering the biocentrism of Francé. The result of this synthesis was *Der Raum als Membran*, an architectural theory with *vitalmystisch* overtones published at the end of 1926, just before Ebeling left the Bauhaus for good.²⁰² *Der Raum als Membran* articulates Ebeling's Francéan ecological view of architecture as a practice which should take into consideration the ecosystem of which the structure is a part. Buildings should be made to interact with, rather than exclude, their environments; their envelopes should be treated as "membranes," that like our skins, act not only as barriers, but also as transmitters. Ebeling recognized the architectural projects of the Glass Chain as his precursors in this book. His description of the change in style from that of the Glass

Chain to his own implies his awareness of a unity of purpose behind both.²⁰³ In his review of *Der Raum als Membran*, Bruno Taut noted that in contrast to the "crystalline" architecture of the *Gläserne Kette*, Ebeling describes his as a "biological architecture," and Taut implicitly agreed with Ebeling that though differing in style, both are performed within a context of an awareness of our unity with nature.²⁰⁴ Not surprisingly, Ebeling's "biological architecture" has been recognized as a forerunner of today's ecological architectural practice.²⁰⁵ Just as in Lissitzky's spread in "Nasci" juxtaposing Schwitters' work with a plant, for Ebeling's Francéan *biologische Architektur*, "das neue Ursymbol ... wird die lebende Pflanze."²⁰⁶

f. The Analogous Projects of Moholy-Nagy and Francé

The biological pure and simple taken as the guide.
(Moholy-Nagy 1928)²⁰⁷

Though I am not certain he attended them, it might well have been in one of Moholy-Nagy's classes -- or from one of Moholy's students -- that Ebeling learned of Francé's *Die technischen Leistungen der Pflanze*. I presume this, for it is in this book that Francé began to articulate his concepts of *Biotechnik* and the *Grundformen*, aspects of Francé's thought which Moholy-Nagy taught at the Bauhaus. Thus, in *Von Material zu Architektur*, Moholy's book based on his Bauhaus teaching, he discussed Francé's *Biotechnik* and quoted *Die Pflanze als Erfinder* extensively on form and function in the natural world. He also discussed the *Grundformen*, and in the second American edition published as *The New Vision* in 1938, he depicted them.²⁰⁸ (Fig. 4-23) In addition, in these and in his final book, *Vision in Motion*, Moholy quoted from Francé's 1921 compendium of biocentric philosophy, *Bios: Die Gesetze der Welt*, and he continued to teach Francé's concepts in Chicago.²⁰⁹ Because he does not say so, and because *Von Material zu Architektur* only appeared after Moholy's departure

from the Bauhaus in 1928, we do not know exactly when he began to incorporate Francé's idea into his curriculum. Given his friendship with Hausmann, Mies and Lissitzky before he was called to the Bauhaus early in 1923 when the excerpt from *Die Pflanze als Erfinder* appeared in *Das Kunstblatt* (a journal they all read), it seems safe to assume that he studied it just as the other members of his circle did. Were this the case, then he might have included Francé's *Biotechnik* as well as the *Grundformen*-concept in his teaching when he first began holding the *Vorkurs* in 1923.²¹⁰ In any case, by early 1925 Moholy described the *Vorkurs* curriculum in biocentric terms, invoking von Uexküllian, Marcusean-Hausmannian and Francéan themes and terms such as *Umwelt*, *Grundelement*, perceptual education, function and form:

die Grundlehre ... vermittelt [dem Student] die Grundelemente eines vielseitigen Wissens. Ihre Einstellung zur Umwelt wird geklärt, die oft abgestumpfte Sinnestätigkeit geweckt, geschärft und ihre Verwendung unter die Kontrolle der eigenen Persönlichkeit gestellt. Lehre der Naturbetrachtung, der Farbe, Flächen, Form, des Materials, der Funktion, der Proportion, des Raumes wird vermittelt.²¹¹

The ideas expressed in the *Kunstblatt* excerpt are certainly discernable in Moholy's first book, *Malerei, Photographie, Film*, the manuscript for which -- just as Lissitzky's "Nasci" -- was ready by the summer of 1924.²¹²

When Moholy arrived in Weimar, Francé was in town working on *Plasmatik*, a book in which the scientist conceived of all organic matter as part of a kind of superorganism which he termed *Plasma*, and in the introduction to which -- as we have seen in Chapter Three -- he made a direct reference to the Bauhaus. Remember also that the Francés spent an evening with Gropius that summer of 1923, and they visited the *Bauhausausstellung*, the organization of which Moholy was hired to coordinate. While I have found no evidence of a meeting between Francé and Moholy, it is plausible that either Francé -- who would have heard of the controversial hiring of his

compatriot at the Bauhaus -- or Moholy -- who might have got wind of the presence of the famous scientist in a town as small as Weimar -- would have tried to secure one.²¹³

Whether or not Moholy and Francé actually met, there is no doubt that Moholy was familiar with Francé's thought by the time he wrote *Malerei, Photographie, Film* -- his manifesto of the New Vision -- in 1923-24.²¹⁴ If we also take into consideration László and Lucia Moholy-Nagy's background in the *Freideutsche Jugend*, the *Pädagogische Reformbewegung*, and Berlin's International Constructivist circle, then like "Nasci," *Malerei Photographie Film* was constituted within the biocentric Constructivist discourse. Unlike in *Von Material zu Architektur*, Moholy does not refer to Francé directly in this book. But Lissitzky barely does so in "Nasci" and the evidence for Moholy's awareness of Francé is contained in both its text and layout.

Malerei, Photographie, Film has typically been regarded as a utilitarian call to exploit the formal qualities contained in photographic images of all kinds, those produced by regular cameras and those inherent to the full range of what Harry Robin has referred to as the products of scientific "self-imaging," such as microscopic, telescopic and x-ray photography and film.²¹⁵ As Moholy-Nagy wrote, "The photographic apparatus has provided us with surprising possibilities which we are only now beginning to evaluate. These optical surprises latent in photographic procedure, become available to us very often through objective 'non-artistic' pictures taken by scientists, ethnographers, etc."²¹⁶ This has been seen as the essence of Moholy's *Neues Sehen*, his New Vision. Molly Nesbit's analysis is typical. She writes that "nature for [Moholy-Nagy] was simply a raw material for art and industry alike, a material to be seen with a camera, worked on and converted to the new vision."²¹⁷ Even Eleanor Hight, whose recent book on Moholy's photography rightly attempts to counter the view that Moholy was a mere formalist,

interprets the contents of this book in a similar fashion:

For Moholy, the scientific photographs pointed to a new way of seeing the world and, in the process, evoked a sense of amazement about hitherto unseen aspects of it. However, this new seeing for Moholy is something very visual, formal, and abstract.... In equating the three types of image -- photograph, photogram and painting -- he seemed to be suggesting that the relationship of light and dark forms floating in an infinite space is more important than the object pictured.²¹⁸

As we have seen, Nesbit's view on Moholy's relations to nature is incorrect. While Nesbit's and Hight's reading of the *New Vision* as promoting the creative exploitation of formal possibilities inherent in the camera is correct, it is incomplete. Though the captions of the book's extensive illustrations do, by and large, comment on the visual values of these images, commentators on this book have not only overlooked the *visual rhetoric* inherent to the juxtaposition of natural and artistic forms in the context of mid-1920s Germany, but also the fact that Moholy-Nagy saw these values as first and foremost "creative elements which are rooted in biological laws," and only secondarily as forms which "can also be mobilised as constructional and compositional auxiliaries."²¹⁹ Even when writing about the fundamental aesthetic components of colour and *Faktur*, Moholy's rhetoric is biologicistic: "The biological functions of colour, its psycho-physical effects, have as yet scarcely been examined. One thing, however, is certain: it is an elementary biological necessity for human beings to absorb colour, to extract colour."²²⁰ As a consequence of what Haus sees as Moholy's "failure" to distinguish between natural and human causes of *Faktur*, "he 'naturalized' the entire category of material work and divested it of all social attachment."²²¹ Surely Moholy's treatment of basic visual values cannot be described adequately with the term "formalist." But even more, Moholy's obsession with novel viewpoints and visual qualities was part of his effort to "educate" vision, to take vision and other sensory experiences to their biological

limits. In this regard his major inspiration was Raoul Hausmann's Ernst Marcus-inspired psychobiological attempt to effect a radical biocentric reform of sensory experience, put forward in a number of publications of the early 1920s. As Hausmann wrote in an unpublished text of 1921 -- around the time that he, Arp, Moholy and Puni were formulating their "Elementarist Manifesto": "Die tote Mechanik unseres durch Newton bestimmten Sehens ist nicht Sehen, ist nicht Wahrnehmen -- sie ist nur Trennung der lebendig-dynamischen Erscheinung in lauter rubrizierte Klassen, Kategorien und Begriffe." But while Hausmann's conclusion from this -- based on an old-fashioned view of photography as mere "Wahrnehmung" -- was "Nein, wir sind nicht und wir wollen nicht sein: die Photographen!," Moholy decided soon after this text was formulated to employ photography precisely as the principle means to effect a revolution of vision in Hausmann's biocentric sense.²²²

Moholy is in fact surprisingly frank when it comes to his biocentric view of art in this book.²²³ Indeed it is hard to make sense of the book's introductory essay without the context of contemporary biocentrism, particularly of Francé's biologicistic conception of the *Bios* as consisting of nested hierarchies of *Biocönose*, or ecosystems in or on their way to states of dynamic equilibrium.²²⁴ While Francé writes, 'Es liegt also in Wesen des Biologischen, dass jedes Erlebnis und die Summe aller Erlebnisse: der Bios, als ein Ganzheitskomplex erscheint, der aus Teilen besteht, die einander irgendwie zugeordnet sind,'²²⁵ Moholy refers to the "rootedness [of a work of art] in the life of a collective entity," and he holds that "'Art' comes into being when expression is at its optimum, i.e. when at its highest intensity it is rooted in biological law, purposeful, unambiguous, pure."²²⁶ As Francé promoted the integrated harmony of nature as a socio-cultural model, Moholy decried the overspecialization of knowledge, and called for, as Irene-Charlotte Lusk put it, "mit Hilfe der

Kunst eine Harmonie des gestörten biologischen Gleichgewichts, einen Ausgleich der Gegensätze zu schaffen."²²⁷ He saw the balance of the abstract components of his artworks as aids to achieving balance in social *Biocönose*.²²⁸ Moholy's biologism was important enough for him to plan a book by a certain Martin Schäffer on the topic of "constructive biology" when he first undertook the *Bauhausbücher* project in 1923 -- a plan that was supposed to have been nearly realized in 1924, and was still forecast shortly before Moholy left the Bauhaus in 1927. The very term *konstruktive Biologie* is suggestive of both Constructivism and biologicistic biocentrism.²²⁹

Employing the biologicistic, Monistic and neo-Vitalistic terminology of biocentric discourse employed by his Bauhaus colleagues and discussed in Chapter Three, Moholy called for the unity of culture, indeed "the unity of life":

With its ramifications and its fragmenting action in every field, specialization had destroyed all belief in the possibility of embracing the totality of all fields, **the wholeness of life**. Since, however, the *Gesamtkunstwerk* is only an addition, albeit an organized one, we cannot be satisfied with it today. What we need is not the '*Gesamtkunstwerk*', alongside and separated from which life flows by, but a synthesis of all the vital impulses spontaneously forming itself into the all-embracing *Gesamtwerk* (life) which abolishes all isolation, in which **all individual** accomplishments proceed from a biological necessity and culminate in a **universal necessity**.²³⁰

Moholy's Neo-Vitalist intentions were also clear in the original title of *Von Material zu Architektur*: "Von Kunst zu Leben."²³¹

Not only was Moholy's *Weltanschauung* biocentric, his interest in this wider range of images and imaging technologies was rooted in the biocentric tradition of scientific imagery as a signifier of the harmony and beauty of nature, of *kosmische Einheitsgefühl*; of such images as exemplars of a biocentric morality directly reflective of "nature." Moholy's approach derives from the late 19th century phenomenon of aestheticized scientific imagery -- a naturamorphic analogy --

epitomized by Ernst Haeckel in his scientific illustrations collected in the 1899 album *Kunstformen der Natur* and recently expressed in the powerful images of the "Schelpennummer" of *Wendigen*, which exercised such a strong fascination on Lissitzky, Moholy and others. Brian O'Doherty has called this phenomenon "the poetics of bourgeois wonder," but as he points out, this wonder is not only one of formal values. It is also "informed by a quasi-religious sense of a higher order revealed through the microscopic."²³² This quasi-religious sense is the biocentric moral value with which Haeckel imbued natural images.

Francé was, of course, Haeckel's direct heir in this regard. Married to Annie Francé-Harrar -- a one-time art critic well-connected in the Munich art world -- Francé was a visually intelligent man, who though conservative in his own artistic tastes, was a talented and highly regarded scientific illustrator. Francé both executed his own illustrations, and he made extensive use of photographic illustrations in his publications, many of these photographs by himself or by his wife.²³³ Because of the limited focal range of microscopic photographs, and because it was difficult for such images to illustrate the ecological, that is *interactive* aspect of microscopic *Biocönose*, Francé preferred to produce his own illustrations for his books. While, in emphasizing the interaction in ecosystems Francé was polemically rejecting the *Jugendstil* aesthetics of Haeckel's prettified representation of microscopic and undersea creatures in isolation as autonomous objects of beauty, Francé still operated self-consciously within the Haeckelian tradition, elaborating Haeckel's concept of ecology and his Monist philosophy, effecting a revision of Haeckel's style of decorative scientific illustrations adequate to the interactive concept of ecosystem, and emphasizing the moral value of the appreciation of natural beauty. In the process, Francé developed his own style of scientific illustration.²³⁴ (Figs. 4-24, 4-25)

Informed by Francé's ideas, and familiar with his usage of scientific photographs in *Bios. Die Gesetze der Welt*, as well as the scientist's own illustrations, Moholy's concern with formal values in found photographs was rooted in the moral and aesthetic appreciation of nature typical of Monism. Indeed Francé may very well have exercised an influence on Moholy-Nagy's biomorphic late art style of the 1930s and 40s.²³⁵ (Fig. 4-26) Moholy's appropriation of Polak's images from the "Schelpennummer" of *Wendingen* (whose context -- as determined by Wijdeveld's essay -- was itself biocentric), and of Albert Renger-Patzsch's close-up photographs of plants produced for the biocentric "*Biosoph*" Ernst Fuhrmann (and which the photographer himself later understood in the biotechnical sense of the naturamorphic analogy), is of more than merely practical significance for illustrating his book.²³⁶ (Figs. 4-14, 4-15, 4-27) The very sources of these images in *Malerei, Photographie, Film* connote Moholy-Nagy's biocentrism.

The bulk of *Malerei, Photographie, Film* is devoted to captioned images, many of them applied photographs here reproduced as exemplars of the (novel) aesthetic value inherent to images not intended as works of art. Rather than merely formal devices, however, some of Moholy's visual comparisons are exemplars of the naturamorphic analogy, which make a similar point that Francé's concept of *Biotechnik* does.²³⁷ With Moholy's acceptance of Francé's biotechnics in mind, one can no longer read this photo-juxtaposition of a flock of geese and an aircraft formation as merely illustrating rhyming contrasts of light and shadow; it also functions as an illustration of Francéan biotechnic principles underlining the view that we humans are neophytes when it comes to the technology enabling flight. (Fig. 4-28) The juxtaposition of Polak's radiograph of a nautilus shell with one of Moholy's own photograms embodies a similar argument that goes beyond the caption's narrower purpose of demonstrating the wide tonal range possible using the two imaging technologies. (Fig. 4-14) Moholy does not

employ just any photogram to this end, he employs one including a spiral form, one of many such works in his oeuvre at the time. Moholy would have known Francé's illustration of galaxies as instances of natural spiral form in *Bios*, as well as his accompanying discussion of such astronomical form as the result of the same functional laws that operate at the smallest level of scale:

Das Grundlegende, die Mechanik der Formänderung unter dem Einfluss von Funktionen ist vielmehr ein Weltphänomen, dem man auf Schritt und Tritt vom Kleinsten bis ins Grösste begegnet.... [S]chon die Gestalten ... der kosmischen Gebilde: Nebelflecken, Kometen, Sonnen und ihre Trabanten [sind] nichts als die technischen Spiegelbilder ihrer jeweiligen Funktion.... Formlosigkeit bei sonst funktionslosem Massensein, ist in den Weltnebeln da, die aber sofort in Spiralform und Zusammenballungen übergeht, sobald Bewegungsfunktionen, Rotationen auftreten. Die Funktion prägt also im Anorganischen ebenso gut die Form wie im Organischen.²³⁸

Moholy had more in mind than examples of telescopic photography as alternative image-making devices, or as found images with instructive visual values, when he composed this layout of astronomical photographs. (Figs. 4-29, 4-30) In fact, Francé's text in *Die Pflanze als Erfinder* explaining the spiral's universality as due to it being the path of least resistance, is located in the paragraph before the one on *Grundformen* quoted by Lissitzky in "Nasci" and later by Moholy himself in *Von Material zu Architektur*.²³⁹ As we have seen, Francé's discussion of the spiral as the most functional method of movement through any medium was both an early indicator and an instigator of the fashion for spiral form -- especially as manifested in shell growth -- discernable in Central European avant-garde circles at the time, and Lissitzky saw the spiral as the *Grundform* adequate to the times. And it was Moholy-Nagy who taught his friend, the photographic historian Beaumont Newhall, to notice that "in spite of the fact that astronomical photographs are taken solely as scientific records, some of them have an awe-inspiring beauty,

especially those of spiral nebulae," after Moholy emigrated to the United States in 1937.²⁴⁰ With Moholy's reading of Francé in mind then, one can better understand the inclusion of no fewer than five photographs of spirals in Moholy's book, including one of a gramophone record, an invocation of the topos of self-similarity and the biocentric baggage which that invocation carried.²⁴¹ (Fig. 4-31) In the spread of two x-ray images, one of human hands and the other of a frog, we are not only experiencing -- as Moholy's caption puts it -- "the penetration of the body with light [as] one of the greatest visual experiences," we are also having the parallels between our own skeletal structures and those of animals pointed out to us; of our status as just one of the many zoological species.²⁴² (Fig. 4-32) In his juxtaposition of a herd of Zebra at a watering hole and the aerial photograph of an experimental Bavarian fish-farm operation displaying a striped, chiaroscuro pattern, Moholy is not merely making a visual comparison, he is also invoking the parallel between the "natural technology" of the Zebra's surface markings and our adaptation of nature's technologies in a fish farm.²⁴³ (Fig. 4-33) When Moholy reproduces close-up photographs of cacti which Albert Renger-Patzsch produced on order for Ernst Fuhrmann's book on spines in plants, he is not only calling attention to the expressive straight and curved lines emphasized by their enlargement through the close-up lense, he is also pointing out the variations on the spinal defense technologies of "die Pflanze als Lebewesen."²⁴⁴ (Fig. 4-27) When Moholy includes photomicrographs of a louse and a barnacle's foot, he is both documenting the aesthetic possibilities inherent to the microscope, and he is tapping into the old tradition of the *Kunst und Wunderkammer* -- recast by Haeckel in the late 19th century as a fascination with the wonders and beauties of the microscopic and the undersea.²⁴⁵ (Figs. 4-24, 4-34) Indeed, at the German Werkbund's "Film und Foto" (FIFO) exhibition held in Stuttgart in 1929, for whose German sections Moholy-Nagy -- as

we shall see in Chapter Five -- was largely responsible, the integration of his own photograms with microscopic photographs gave visitors the chance to compare them directly, in order to see the structural parallels and contemplate our deep rootedness in the "forces which make manifest the elements of the world."²⁴⁶

Though the creative potential of scientific photography had been noted by technical authors writing for amateur photomicroscopists, who in turn had been producing such imagery for years, Moholy was the first within the high artistic discourse to suggest its use in the making of art.²⁴⁷ He also encouraged artists to view "found" applied photography as a source of visual inspiration. As Newhall writes; "It was this attitude of approaching photographs in the quest of form that led him to appreciate scientific photographs for their quite often accidental beauty. In them he found a new vision of the world."²⁴⁸ For Moholy, imaging technologies not only had the capacity to supplement vision, they could actually reeducate it -- and not only in a visual sense, but in a moral sense as well.

Moholy further explicated the biocentrism of his New Vision in other publications, both contemporary to the early editions of *Malerei, Photographie, Film*, and after them. In 1927 Moholy commissioned the biocentric music teacher Heinrich Jacoby to write an article for *i10* which was to be entitled "die gemeinsame biologische grundlage aller gestaltungen," and he described Jacoby's overall project as "eine der wichtigsten geistigen leistungen unserer zeit." In *The New Vision*, Moholy notes that though the article did not appear, "the title was vindicated beyond doubt by Jacoby's previous works."²⁴⁹ As we have seen, in "Ismus oder Kunst?," reiterating ideas originally contained in the 1921 "Call to an Elemental Art," Moholy made clear his debt to Francé's and Hausmann's biocentric explication of human creativity. Abstract art -- both painterly and photographic -- represented for Moholy evidence

of our biologically determined, unconscious drive to reproduce the "elementary" forms and forces, the *Grundformen* inherent to nature. He saw photography as a device useful in freeing the painter from the tendency to paint naturalistically, a tendency contrary to the potential to discover these *Grundformen*.²⁵⁰ Since for Moholy, everything is grounded in nature -- realism because it is a depiction of nature, and abstraction because, as psychobiology holds, it is an unconscious expression of our awareness of its elementary forms and forces -- the ultimate aim of artistic education is to make people aware of our groundedness in, our unity with the biological, the "natural." But he also saw an artwork of pure form, such as the photogram, as an exemplar of the interconnectedness of things in the world, of the ways in which we are always in interactive, dynamic equilibrium with the other elements of the *Biocönose* of which we are a part.

Even his understanding of Einstein's and Minkowsky's space-time continuum, an element central to his New Vision, particularly its articulation as a "Vision in Motion," is related to his biologicistic view of the world. As Veit Loers correctly implies, Moholy attempts -- even if naively -- to embed Einsteinian relativity theory within a biocentric matrix.²⁵¹ In an addition to the original text of *Von Material zu Architektur* Moholy-Nagy writes that

Young people are today conducting investigations of the biological bases and requirements, in different fields of life. ... Efforts toward a new spatial conception and creation should therefore -- important as they are -- be understood only as a component part in this new orientation. The most primary sources of space experience are even today submerged under technicalities, a state of affairs which prevents the emergence of the future architecture, the creation of a new life space for men. Architecture will be brought to its fullest realization only when the deepest knowledge of human life as a total phenomenon in the biological whole is available.²⁵²

This Francéan, aesthetic-ecosystems-based thinking was also reflected in 1942, when he wrote:

The photogram ... produces space without existing space structure only by articulation on the plane.... there starts an invigorating investigation about the incoherent use of our rich resources. Technological ingenuity provides us with gigantic structures ... but how we use them is shockingly anti-biological -- resulting in wild city growth, elimination of vegetation, fresh air, and sunlight. ...in the shadow of these modern buildings we ... tolerate the slums.... So it seems that the most abstract experiment of space-time articulation carries a sensible reality.... Such experiments may signalize a spatial order in which not single structural parts ... will play the important part, but the relationships of neighbour units, buildings and free areas, shelter and leisure, production and recreation, leading towards a biologically right living most probably through a right regional planning; towards a city-land unity....²⁵³

[T]he photographer ... has to focus his attention on the facts which give an adequate record of the actions and ideas of his time. As he cannot do this without participating fully in life, consciously or intuitively his specialized field must be integrated with social reality. ... Then the photographer will bring to the masses a new and creative vision. This will be his social significance. For culture is not the work of a few outstanding people ... their theories have to penetrate into everybody's daily routine.²⁵⁴

Moholy ends "Ismus oder Kunst?" with the admonition that "Es kann nicht genug daran gearbeitet werden, die Menschen aufzuklären, sie zu der Erkenntnis ihres organischen, elementaren Funktionsaufbaus zu führen." In this light, one can regard Moholy's overall pedagogical project as one analogous to Francé's attempt to make people aware of what he saw as our biologically-determined state: the enlightenment of the masses concerning their unity with nature, the counteracting of the tendency to a consciousness of the divide between "nature" and "culture;" the enhancement of the extent to which such an awareness can further the harmonious development of culture as a part of nature, within it.²⁵⁵ To Francé's project, Moholy added a sophisticated perceptual-aesthetic dimension, one which wished to educate people in using their biologically

determined sensory capabilities to their fullest. Moholy's New Vision was at base a pedagogical project to promote a biocentric, that is, an ecological view of the world. Francé's support for the criminal National Socialist state -- a support of which Moholy-Nagy was evidently unaware -- does not lessen the import of the parallelism of their projects.

g. The Naturamorphic Analogy as Fashion

Though as we have seen in Chapter Three, Kandinsky preceded him, Moholy was among the first to illustrate the naturamorphic analogy in an artistic context. In the text cited at the start of this section, Gustav Hartlaub was referring to the fashion for the naturamorphic analogy in German publications by the second half of the decade -- particularly in the Deutsche Werkbund's journal *Die Form*, launched as a monthly by Walter Rietzler in 1925. As implied by Rietzler in his Monist biocentric article illustrating the naturamorphic analogy, "Einheit der Welt," this fashion was rooted in an awareness of Francé's theory of the *Grundformen* of nature and of *Biotechnik*, as well as in Klages' poetic concept of the rhythms of nature. As remarked by Rietzler, it was also stimulated by Ernst Kropp's Haeckelian book of 1926 on nature as a model for the arts, *Wandlung der Form im XX. Jahrhundert*, for which Rietzler wrote the introduction.²⁵⁶ (Fig. 35) In 1928 it was to receive stimulation through the publication by Karl Nierendorf (the same Nierendorf whose bookstore supplied Mies with his Francé publications), of Karl Blossfeldt's turn-of-the-century *Musterbilder* for his smithery students as *Urformen der Kunst*. Enormously successful, as we shall see in Chapter Five, this book was important for Kállai in the development of his conception of *Bioromantik*.²⁵⁷ As Rudolf von Delius wrote in his psychovitalist article "Kunstform und Naturform" published in *Die Form* and illustrated with images of shells from Kropp's book, "der Ablauf und Rhythmus der Formbildung in Kunst und Natur ist der gleiche."²⁵⁸ And the biocentric nature of this

trend was reflected in Hugo Häring's critique of the arbitrary geometric abstraction of the International Style in his lead article for the first issue of *Die Form*, "Wege zur Form." Häring wrote, "wollen wir also Formfindung nicht Zwangsform, Gestaltfindung nicht Gestaltgebung, so befinden wir uns damit in Einklang mit der Natur, indem wir nicht mehr gegen sie handeln, sondern in ihr."²⁵⁹

We have seen that Beaumont Newhall was struck by Moholy's aesthetic and *vitalmystisch* regard for astronomical and other scientific photographs once he met the artist. In 1934, two years before Moholy's arrival in America, however, Francé's and Francéan biotechnical ideas had spread to the point that Newhall's boss, Alfred Barr -- before his institutionalization of Grigson's use of Haddon's term "biomorph" in an artistic context -- introduced the catalogue to the "Machine Art" exhibition held at the Museum of Modern Art with the following words:

Machine Forms and Natural Forms. The beauty of the machine art in so far as it is a mere by-product of function may seem a meagre and even trival kind of beauty. But this is not necessarily so. The beauty of all natural objects is also a by-product -- the helix of a snail's shell (and a steel coil), the graduated feathering of a bird's wing (and the leaves of a laminated spring), the rabbit's foot-prints in the snow (and the track of non-skid tires), the elegance of fruit (and of incandescent bulbs).²⁶⁰

h. Ambivalence

Just as Elderfield and Lodder have hinted at the biocentric Constructivist discourse, I am not the first to recognize the biologicistic, that is, biocentric or "organic" content of Moholy's writings of this time. As we saw at the start of Chapter Three, Sibyl Moholy-Nagy recognized her late husband as a "Vitalist." The biologism inherent to Moholy's position was understood by others among his contemporaries, such as Carola Giedion-Welcker, and by Menno ter Braak, who in his

review of *Malerei, Fotografie, Film* of 1928, discusses Moholy's biological determinism.²⁶¹ In his grandiose, thoroughly Monist-organicist plan for a Werkbund exhibition intended for Cologne in 1932-33 entitled "Die neue Welt," and published in *Die Form*, Ernst Jäckh began his shortlist of relevant thinkers with Max Scheler, Ludwig Klages, Hans Prinzhorn and Hermann Keyserling. "The New Era is an organic result of the developments of a century, the conscious experience of the continuity of the most decisive century of discoveries, inventions and transformations of form.... A development from the atomistic nineteenth into the organising, partly even organic twentieth century."²⁶² From the realm of the arts -- listed immediately after the philosophers -- only three phenomena were named: "Von Henry van de Veldes 'Neuen Stil' an bis zu Ernst Kropps 'Wandlungen der Form im 20. Jahrhundert' und zu Moholys Von Material zu Architektur'."²⁶³ The biocentric anarchist art critic Herbert Read also recognized Moholy's biocentrism. Read held that Moholy's "experimental material is the result of a method, and underlying that method is what one must call a philosophy of life. The method Moholy-Nagy called 'Design for Life': for the philosophy he had [had] no specific name ... but the keyword to describe his outlook is *organic*."²⁶⁴

While Alain Findeli recognizes Moholy's pedagogy as "un fonctionnalisme organique" or "fonctionnalisme vitaliste," such awareness is exceedingly rare outside Germany.²⁶⁵ In current writing it has been German -- often Marxist and post-Marxist -- critics such as Irene-Charlotte Lusk, Rainer Wick and, as we have seen in Chapter Three, Andreas Haus who, sensitized to the negative connotations of biologism in the German context, have been more apt to recognize the biologicistic aspect of Moholy's biocentrism than others. In her highly valuable 1980 study of Moholy's photomontages, Lusk cannot hide her astonishment when she realizes the depth of Moholy's biologism: "Überraschend ... ist ... der Biologismus, mit dem er die physischen Funktionen und ihre harmonisierung durch Ästhetik

mit dem Glück der Menschen gleichsetzt. Die soziale Dimension wird suspendiert; Moholy-Nagy gerät hier in eine Nähe zu Programmen, die ein Jahrzehnt später in Deutschland durchgesetzt wurden, mit denen er sich in keiner Weise identifizierte."²⁶⁶ Wick acknowledges Moholy-Nagy's view of technology as "organic" even though he fails to place his thought into its larger biocentric context.²⁶⁷ While in his article "Sinnlichkeit und Industrie," Andreas Haus is the first to have stated outright that "Moholy war, durch seine Neigung zur Lehre des Popularbiologen Raoul Francé bereits in den zwanziger Jahren mit einem... 'biozentrischen' Weltbild bekannt geworden,"²⁶⁸ in his earlier writing on Moholy's photography, it is exactly Haus' failure to recognize the biocentrism informing Moholy's early work, that leads him to what I think is an inaccurate analysis: He sees Moholy as moving from a socially progressive, critical "Activism" during the 1920s, to a John Dewey-influenced biologism, a "sinister configuration - undialectic, organic, of necessity nature-like, 'existentialist' in so far as the alienated environment as such becomes the reason for self-enjoyment. For the first time [in the later 1930s] there manifests itself 'empathy' with the alien automatism ... In this irrational and magical procedure Moholy abandoned completely the subversive content of his earlier filmscript *Dynamic of the Metropolis* and substituted for it signs of fatalism."²⁶⁹

Taking into consideration also the fact that Moholy had adopted a biologicistic, biocentric world-view in the early 20s, already, and that this view coexisted happily with his Leftism, as it did with the Leftism of Lucia Schulz and so many others at the time, Lusk's and Haus' implication that biologism and a "revolutionary" or "subversive" position are mutually incompatible does not hold water. Indeed, though he was a committed Francé-style biological determinist in the aesthetic sphere, Moholy was not convinced -- as was Francé -- that social life is biologically determined, or rather, even if it

is biologically determined, that such a determination should not be "resisted" or "challenged" when necessary. As Moholy wrote in 1929: "I have slowly formed the opinion that, seen in perspective, everything develops organically. This does not necessarily mean that one can accept the present system without opposition."²⁷⁰ And Moholy was not the only biocentric avant-gardist of the interwar period to voice such ambivalence about a fatalistic form of biologistic social determinism. We have seen Hausmann's critique of what he saw as Francé's reactionary political position and incipient authoritarianism. But Hausmann was the only biocentric intellectual to voice this concern at the time. During the early 20s, even the left-wing press was neutral concerning Francé's books. In his biological column in *Sozialistische Monatshefte* -- a socialist cultural journal supported by the avant-garde -- Walter Zimmermann followed Francé's development, reviewing books such as *Zoësis* and *Bios: Die Gesetze der Welt* fairly favourably. Francé was -- like Baron von Uexküll -- seen as a politically neutral advocate of a biocentric world view despite Francé's and von Uexküll's conservative, indeed Rightist, connections.²⁷¹

It was not until the political lines were drawn more clearly later in the decade, and especially during the 30s, that other Weimar *Biozentriker*, including Francé's admirers, would come to see the danger inherent in a hard-line socially deterministic and racially essentialistic biologism. One of the first to do so was Adolf Behne, an early advocate of von Uexküllian biocentric architectural theory. Starting in late 1922, with his article "Kunst, Handwerk, Technik," Behne became critical of anti-technical Romanticism.²⁷² He criticized an exaggerated organicism that did not distinguish between "nature" and "culture." In a plain reference to the fashion for spiral form in shells among biocentrically minded artists and architects, and specifically to Wijdeveld's article in the "Schelpennummer," Behne wrote in 1923 that "das Schneckenhaus z.B. ist ein Teil des individuellen Schnecken-

körpers und dient keinem sonst -- organisch -- als Haus. Es wächst mit den Schneckenindividuum und es stirbt mit diesem Das gebaute Haus wächst weder, noch stirbt es."²⁷³ He calls this romantic organicist architecture (the kind that fully embraces the organicist analogy) anti-social:

Der Mensch steht zwischen Natur und Gesellschaft. Er entscheidet sich für die menschliche Gemeinschaft und steht dann in einer gewissen Spannung zur Natur. Er entscheidet sich für die Natur und steht in einer gewissen Spannung zur Gesellschaft. Anders ausgedrückt: Der Mensch nimmt zur Basis seiner Handlungen und seiner Arbeit entweder die Tatsache, das Bewusstsein, menschlicher Gemeinschaft und seiner Zugehörigkeit zu ihr -- oder das Gefühl einer Einheit mit der Natur. Er geht als Schaffender vom Ganzen zum Einzelnen oder vom Einzelnen zum Ganzen! Hiernach scheiden sich ganz klar zwei Typen; deren letzte schärfste Ausprägungen sind der Rationalist und der Romantiker. Wir haben innerhalb der Architektur den konsequenten Funktionalisten als Vertreter des einen, des romantischen Typs kennengelernt. Sein Gegenpol ist der zum Formalisten erstarrte konsequente Rationalist.²⁷⁴

Biologicistic socialism was even criticized by Rietzler in an editorial published at the dangerous moment of 1932:

Wir halten es aber andererseits für ein verhängnisvolles Missverständnis, wenn man als eigentliches Ziel des Sozialismus die Durchsetzung jener Forderungen, die Sicherung der fälschlich sogenannten "biologischen" Existenz des Menschen ansieht und daraus die Folgerung zieht, dass sich auch die Werkbundarbeit heute danach allein orientieren müsse. Wenn man den biologischen Massstab an den Menschen anlegt, darf man ihn nicht betrachten wie ein anderes Tier auch und darf nicht vergessen, dass zur "biologischen" Existenz des Menschen auch der ganze ungeheure Reichtum des Geistigen und Seelischen gehört.²⁷⁵

As we shall see in Chapter Five, by the mid-20s Ernő Kállai had become biocentric. Though always anti-Nazi, like Mies and Gropius he at first remained in Germany after the *Machtergreifung* but by 1935 he moved to Budapest, where he was attacked in the right-wing press. He responded with an article opposing ethnic essentialism ironically entitled "His Father

is Swabian, his Mother is Serbian, he, Therefore, is Hungarian." In a move at odds with his critical writing of the previous years, Kállai distanced himself from biological determinism in the social realm: "I don't much believe in the biological explanation for world views and power structure systems."²⁷⁶ Westheim, who -- like Moholy and Lissitzky was of Jewish heritage -- and who had been the first to promote Francé within the avant-garde artistic context, became one of the most vociferous critics of the Nazis' "rasse-biologische Ästhetik" from exile in Paris.²⁷⁷ This response to Francé's biologism and to biological determinism, reflects the range of biocentric political positions as they were played out in the dangerous political landscape of interwar Europe.²⁷⁸

i. Attraction

What was it, then, about Francé's thinking that attracted some International Constructivists? Francé's version of biological determinism appealed to some Leftist intellectuals because it held that all nature -- including culture -- is organized into nested hierarchies of ecosystems, the tendency of which is to arrive at optimal states through symbiotic cooperation more than competition. Awareness of this led Francé to what he termed "objective philosophy" and its practical application, the *Lebenslehre*, which set guidelines for living in harmony with one's environment. In his copy of Francé's 1923 book *Plasmatik*, Mies marked the following passages: "Leben ohne biocönotische Einordnung in das Weltganze undenkbar ist." "Aus der Biocönotik entspringt also die Lebenskunst."²⁷⁹ As we saw in Chapter Two, his systems-based method of holistic thinking convinced Francé of a basic "harmony in nature" which was maintained through strict adherence to the principles of equilibrium and function, but which also implied a problematic social determinism.²⁸⁰ The apparent scientific authority, the *practicality* and the cooperative implications of Francé's program nevertheless appealed to

Leftist cultural practitioners of the twenties who were in reaction to the speculative, occult, and individualistic tone of the Expressionism they emerged from, and were unsettled by the chaos of early Weimar Germany.²⁸¹ Indeed around 1923, at the historical moment when hope for a world revolution was fading among these intellectuals, Francé's "objective," or *sachlich* vision of functionalism and order in nature filled a gap for some. Just as in the French context Le Corbusier and Ozenfant's Purism offered a "reassuring assumption of an inner analogy or equivalence between classicism and mechanics," for those in Germany Francé's thinking offered scientific legitimacy to innate *kosmovitale Einsfühlung*. Francé's biocentrism was the Germans' *appel a l'ordre*.

But it was also a variety of Neo-Catholicism. Just as Monism was seen by pre-war intellectuals as bridging science and religion, Francé's neo-Monist interwar *Biozentrik* fulfilled the desire for a scientifically-based yet quasi-religious *Weltanschauung* after the war. His new program could potentially appeal to the avant-garde ready for a greater degree of scientific "objectivity," but not prepared to abandon their deep-seated *kosmovitale Einsfühlung* completely. As Charlotte Douglas writes in connection with the Russian avant-garde, "the biological paradigm had the advantage of combining a well-developed, objective, and scientific system with the immediacy and inclusiveness of living nature; it seemed to make possible an ideal transcendence through the application of purely rational means."²⁸² Through his focus on function in nature with respect to *Biotechnik*, Francé's "biological paradigm" operated in an analogous fashion for members of the avant-garde in Germany. His ideas stimulated Moholy, El Lissitzky and the Ring architects to seek a synthetic, or "transcendent" position which embraced both technology and nature.

For International Constructivists as well as for the Ring architects, Francé provided easy answers, apparently rooted in the certainty of "nature," to vexing questions, and his seven

Grundformen legitimated the artists' essentially arbitrary "elementary," "abstract," "International" styles of artistic and architectural production -- be they biomorphic, orthogonal, or informed by a technological aesthetic -- in a discourse of "nature" rather than a discourse of Platonic Idealism (as did Le Corbusier's and Cézanne's basic geometric solids). As Elderfield writes, "Francé['s] popularized organicism ... was useful both to Lissitzky and to Schwitters in providing a justification of their ideas that was no less 'scientific' than that which the anti-naturalist faction of International Constructivism possessed, and one, moreover, which corroborated Malevich's notion of universal form. They were able to claim, therefore, that geometry and abstraction were not only the province of cultivated urban man (as De Stijl theory insisted) but were what linked modern man to his natural roots."²⁸³

Finally, members of the Weimar-German avant-garde were attracted to Francé's legitimation of human technology and of functionalism as "natural."²⁸⁴ As Haus wrote of Moholy's rethinking of our relationship with technology:

Bleibt man in der von Moholy bemühten "biologischen" Denkweise, so könnte man sagen: Die bislang "unge-niessbare" Technik wird durch den Sachverstand des "elementaristischen" Künstlers fermentiert und so der sinnlichen Nutzung geöffnet; neben den "Stoffwechsel des Menschen mit der Natur", dessen Instrument die Technik ist tritt als neue Dimension der "Stoffwechsel des Menschen mit der Technik". Dies schien erforderlich, nachdem die bislang an der "ersten Natur" orientierte Wahrnehmung vor den ras-ant veränderten Erscheinungsweise auf eine neue, produktive Bewältigung der zweiten Natur der technisch-urbanen Lebenswelt zu konditionieren.²⁸⁵

Indeed it was Francé's framing of human technology as part and parcel of "natural" technology which held the greatest interest for them, and which contrasted with the Purist privileging of the machine analogy. Francé was a thinker who, by seeking to biologize the mechanical rather than merely displacing the mechanical metaphor with a biological one, offered artists the

possibility of a synthesis based in nature. As Lissitzky put it in a letter to van Doesburg of 1924, since he had (through Francé) discovered the identical laws operating in them, he has outgrown the "2 gegenüberstehenden Hosen: Natur und Kunst"; he has moved from a position of binary opposition to one of synthesis.²⁸⁶ It was Kállai's *ab ovo* dialectical system of nature-technology that -- in a sense -- inoculated him against Francé's thinking, a thinking he would have found totalizing. Though he adopted a biocentric position in the later 20s, as we shall see in Chapter Five, when he did so, it was an adaptation of Klages' polar *Geist-Seele* structure which took into account the "demonic" in both nature and technology that he promulgated, rather than what he would have seen as Francé's naive optimism. By 1931-32 he named the artistic manifestations of this dialectic, denotations which reflected his Klagesian "romantic" biocentrism: "*Technoromantik*" and "*Bioromantik*."

In the final chapter I will outline the process by which scientific imagery came to be incorporated into the discourses of art photography and avant-garde art. The nexus of these domains, and the primary agency of this process in Weimar Germany, was László Moholy-Nagy's biocentric-aesthetic, "technoromantic" program of New Vision. New Vision was the realization and creative exploitation of optical possibilities offered by mechanical imaging technologies. It was also vision, as I argue, based in Moholy's biocentrism, a view of the rootedness of humanity in nature, of the "earth as an entity," as he put it. It was this vision, furthermore, which added the final element to Kállai's formulation of the first coherent theory of biomorphic Modernism, "*Bioromantik*."

Endnotes:

1. Adolf Behne, *Die Wiederkehr der Kunst* (Berlin: K. Wolff, 1919), 111.
2. From an unpublished manuscript, dated by Peter Hahn to "Frühjahr, 1919," Peter Hahn, "Black Box Bauhaus: Ideen und Utopien der frühen Jahre" in *Das frühe Bauhaus und Johannes Itten* (Stuttgart: Gerd Hatje, 1994), 22.
3. Unsigned [Le Corbusier?], "L'esthétique mécanique," *L'Esprit Nouveau* no. 1 (October 1920): unpag. For the dating and pagination (if available) of the largely undated and unpaginated issues of *L'Esprit Nouveau* I depend on the index to *L'Esprit Nouveau* published in Stanislaus von Moos, ed., *L'Esprit Nouveau: Le Corbusier und die Industrie 1920-1925* (Berlin: Ernst und Sohn, 1987), 284-92.
4. Unsigned fragment of a paper read at the INKhUK [Institute for Artistic Culture] in Moscow ca. 1921-22. In: Jaroslav Andel, et al., eds., *Art Into Life: Russian Constructivism 1914-1932* (New York: Rizzoli, 1990), 80.
5. Kállai, "El Lissitzky" *Das Kunstblatt* 6, no. 1 (1922) 296. Translated by Oliver Botar. For another example of Kállai's opposition of nature and technology, see "Lajos Tihanyi," *Der Cicerone*, 16, no. 8 (April 1924), 363.
6. Theo van Doesburg, "'Der Wille zum Stil' (Neugestaltung von Leben, Kunst und Technik)" *De Stijl* 5, no. 2 (March 1922): 33-4.
7. Theo Wijdeveld, "Natuur, Bouwkunst en Techniek," "Schelpennummer," *Wendingen*. 5th series, no. 8/9 (1923). 12-15. While the issue is not dated, it would have appeared around September of 1923.
8. Le Corbusier, *L'Art Décoratif d'Aujourd'hui* (Paris: Les Éditions G. Crès, 1925), III-IV.
9. *Mécano*, the title of van Doesburg's Dadaist journal, published in Leiden in 1922-23. Facsimile: (Vaduz: Quartopress, 1979).
10. Le Corbusier, *Vers une architecture* (Paris: G. Crès, 1925), quoted in Stanislaus von Moos, *Le Corbusier: Elements of a Synthesis* (Cambridge Mass.: MIT Press, 1979), 51.
11. Siegfried Ebeling, *Der Raum als Membran* (Dresden: C. Dünnhaupt, 1926), 31.

12. A. Toporkov, "Technological and Artistic Forms," from *Iskusstvo v proizvodstve* [Art in production]. (Moscow: Art-Productional Council of the Visual Arts Department of Narkompros, 1921). John Bowlt trans. in Stephen Bann, ed., *The Tradition of Constructivism* (New York: Viking, 1974), 27, 30.
13. Lazar El Lissitzky in: El Lissitzky and Kurt Schwitters, eds., "Nasci," *Merz* 2, no. 8-9 (April-July 1924). The English translation is from Sophie Lissitzky-Küppers, *El Lissitzky: Life, Letters, Texts* (London: Thames and Hudson, 1968), 351.
14. Lewis Mumford, *Sticks and Stones: A Study of American Architecture and Civilization* (New York: Boni and Liveright, 1924), unpag.
15. Raoul H. Francé, *Plasmatik. Die Wissenschaft der Zukunft* (Stuttgart: Walter Seifert, 1923), 34.
16. Raoul Hausmann, "Ausblick," *G* no. 3 (June 1924): 14.
17. Adolf Behne, *Der Moderne Zweckbau* (Munich: Drei Masken, 1926), 53.
18. Walter Rietzler, "Zum neuen Jahrgang," reply to an open letter from Mies van der Rohe, *Die Form* 2, no. 1 (January 1927): 1.
19. Vladimir Tatlin, "Iskusstvo v techniku" [Art Out Into Technology] *Brigada khudozchnikov* no. 6 (1932): 15-16. The first part of the translation is from Christina Lodder, *Russian Constructivism* (New Haven: Yale University Press, 1983), 212; the second (on the LETATLIN) is from Bann, ed., *The Tradition of Constructivism*, 174.
20. Raoul Francé, *Die Pflanze als Erfinder* (Stuttgart: Kosmos, 1920), 72.
21. László Moholy-Nagy, *Von Material zu Architektur* (Munich: Albert Langen, 1929; Facsimile: Mainz: Florian Kupferberg, 1965), 12.
22. Friedrich Dessauer, *Streit um die Technik* (Frankfurt/Main: Josef Knecht/Carolusdruckerei, 1958).
23. Ingeborg Güssow, *Kunst und Technik in den 20er Jahren: Neue Sachlichkeit und Gegenständlicher Konstruktivismus*, exh. cat. (Munich: Städtische Galerie im Lenbachhaus, 1980), 30-7.
24. The organicist variant of this view was most clearly (and famously) articulated at the time by Oswald Spengler, whose best-selling *Der Untergang des Abendlandes* [Decline of the West] (Munich: Beck, 1920-22) was read by, among others,

Schlemmer, El Lissitzky, van der Rohe and Hugo Häring; and discussed by most everyone else. On Spengler, see, e.g., Thomas Kluge, *Gesellschaft, Natur, Technik. Zur lebensphilosophischen und ökologischen Kritik von Technik und Gesellschaft* (Opladen: Westdeutscher Verlag, 1985). Spengler's thinking is discussed briefly in Chapter Two. On Lissitzky and Spengler, see Peter Nisbet, ed., *El Lissitzky 1890-1941* (Cambridge, Mass.: Busch-Reisinger Museum, 1987), 29. On Häring, see Jürgen Joedicke, *Hugo Häring: Schriften, Entwürfe, Bauten* (Stuttgart: Karl Krämer, 1965), 15. Mies van der Rohe owned both Spengler's *Der Untergang des Abendlandes* and *Preussentum und Sozialismus* (1920). His library is housed in the Department of Special Collections in the University Library of the University of Illinois at Chicago.

25. On Kállai's Constructivism, see Éva Forgács, "Kállai Ernő és a konstruktivizmus," *Ars Hungarica* no. 2 (1975): 277-94; "Bevezető" [Introduction] to Forgács, ed., Kállai, *Művészet veszélyes csillagzat alatt: Válogatott cikkek, tanulmányok* [Art under dangerous constellations: Selected articles, studies] (Budapest: Corvina, 1981), 20-3, and for a shorter, English version: Forgács, "Ernő Kállai: The Art Critic of a Changing Age," *The New Hungarian Quarterly* no. 64 (1976): 174-81. Forgács developed her ideas further in "Der Konstruktivismus von Ernő Kállai," in: Hubertus Gassner, ed., *Wechselwirkungen: Ungarische Avantgarde in der Weimarer Republik* (Marburg: Jonas, 1986), 158-63 and in the excellent "New Perspectives on Ernő Kállai's Concept of Constructivism," *Acta Historiae Artium Hungariae* 35 (1990-92): 27-33. See also Esther Levinger, "The Theory of Hungarian Constructivism," *The Art Bulletin* 69, no. 3 (September 1987): 459-65; Monika Wucher, "Attribute des Konstruktivismus: Die Ordnungsversuche des Ernő Kállai," in Hubertus Gassner, Karlheinz Kopanski and Karin Stengel, eds., *Die Konstruktion der Utopie: Ästhetische Avantgarde und politische Utopie in den 20er Jahren* (Marburg and Kassel: documenta Archiv and Jonas Verlag, 1992), 190-6; and Éva Körner, "Kállai Ernő konstruktivizmus-koncepciója 1921-1925" [Ernő Kállai's conception of Constructivism 1921-1925], *Művészet* no. 6 (June 1993): 74-79. Note that, as Wucher has suggested, Kállai was aware of the polarity "technology-nature" in his very earliest writings already. Indeed, though she does not say it outright, in her discussion of Kállai's use of the term *életesség* [vitality] is embedded an essentially *lebensphilosophisch* worldview from the very start of his artistic writing.

26. For a reproduction of van Doesburg's collage (signed as I. K. Bonset) *La matière denaturalisée. Destruction 2* of ca. 1921, see Evert van Straaten, *Theo van Doesburg 1883-1931. Een Documentaire op Basis van Material uit de Schenking van Moorseel* (The Hague: Staatsuitgeverij, 1983), 22.

27. Peter Collins, *Changing Ideals in Modern Architecture, 1750-1950* (Montreal: McGill University Press, 1965), 149ff. As Collins points out while tracing this contest from the mid-18th century to the 20th, the early 1920s was not the first time such a shift occurred. As we have seen in Chapter Two, a similar controversy around the turn of the century resulted in the sub-disciplines of organicism and holism. M. H. Abrams describes such a process as having taken place during the move from an Enlightenment paradigm of art to that of Romanticism. See Abrams, *The Mirror and the Lamp* (New York: Oxford University Press, 1953), 158. See also Jonathan Culler, "The Mirror Stage," in: Lawrence Lipking, ed., *High Romantic Argument: Essays for M. H. Abrams* (Ithaca: Cornell University Press, 1981): 149-63; and Philip Steadman, *The Evolution of Designs: Biological Analogy in Architecture and the Applied Arts* (Cambridge: Cambridge University Press, 1979), 14-16. On the mechanic versus the "organic" analogy, see also Edward de Zurko, *Origins of Functionalist Theory* (New York: Columbia University Press), 1957. 9-11.

28. Oskar Schlemmer, *The Letters and Diaries*, Tut Schlemmer, ed., Krishna Winston, transl. (Evanston, Ill.: Northwestern University Press, 1990), 115.

29. Schlemmer, September 1922, *The Letters and Diaries* 127.

30. "PRÉsentismus. Gegen den Puffkeismus der teutschen Seele," *Ma* 7, no. 3 (1 February 1922): 42-3. Reprinted in: Raoul Hausmann, *Sieg Triumph Tabak mit Bohnen. Texte bis 1933*. Volume 2. Michael Erlhoff, ed., (Munich: text + kritik, 1982), 25.

31. Mieczyslaw Szczuka and Teresa Zarnower, "What is Constructivism?" (1924). In: Tim Benton, Charlotte Benton and Dennis Sharp, eds., *Form and Function: A Sourcebook for the History of Architecture and Design, 1890-1939* (London: Crosby Lockwood Staples with The Open University Press, 1975), 102.

32. John Willett, *Art and Politics in the Weimar Period: The New Sobriety, 1917-1933* (New York: Pantheon, 1978), 67, 94.

33. Ibid., esp. pp 111-7 and 124-32. On the term "neue Sachlichkeit" see Fritz Schmalenbach, "Jugendstil und Neue Sachlichkeit." In: Jost Hermand, ed., *Jugendstil* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1971). According to Schmalenbach, the term "Sachlichkeit" was popularized at the turn of century by Hermann Muthesius and Alfred Lichtwark (p. 70) and reflected the organic functionalist concept of *Sachlichkeit* in the thinking of Hermann Obrist and August Endell (p. 76). "Neue Sachlichkeit" was first used for painting -- inappropriately as Schmalenbach points out -- by Gustav Hartlaub in May 1923; and for architecture (appropriately) around 1926 (pp. 66-8). In the case of painting, rather than "Neue

Sachlichkeit" work, it was some abstract Expressionism, Dada and Surrealism which was informed by biocentric ideology. On the differences between the usage of the term *Neue Sachlichkeit* for painting and architecture, see pp. 65-6.

34. Ilya Ehrenburg, *Und sie bewegt sich doch* (Berlin and Moscow: Helikon, 1922). Reprint: Baden: LIT Verlag, 1986. The text is dated "Brüssel, September 1921" on page 166 of the reprint edition.

35. G. *Material zur elementaren Gestaltung 1* (July 1923), cover.

36. Hartlaub, Preface to the exhibition catalogue "Neue Sachlichkeit" (Mannheim, 1925). In: Rose-Carol Washton-Long, ed., *German Expressionism: Documents from the End of the Wilhelmine Empire to the Rise of National Socialism* (Berkeley: University of California Press, 1993), 291.

37. Von Moos, *Le Corbusier: Elements of a Synthesis*, 44, 49. Christopher Green reports the time of the appearance of *L'Esprit Nouveau* as November 1920 in his "Léger and L'Esprit Nouveau." In: *Léger and Purist Paris* (London: Tate Gallery, 1971), 49. Marie-Odile Briot dates the journal's appearance to October 1920 in her "L'Esprit Nouveau: Its View of Science." In: *Léger and the Modern Spirit (1918-1931)* (Houston: Museum of Fine Arts, 1982), 61.

38. Waldemar George, "Frankreich und die 'Neue Sachlichkeit'," *Das Kunstblatt* 11 (1927): 389.

39. Von Moos, ed., *L'Esprit Nouveau: Le Corbusier und die Industrie*, 46. See Paul Westheim, "Allemagne: La Situation des Arts Plastiques," *L'Esprit Nouveau* no. 20 (January-February 1924): unpag. On Westheim and *Das Kunstblatt*, see Lutz Windhöfel, "Paul Westheim (1886-1963) und seine Zeitschrift 'Das Kunstblatt' (1917-1933)." In: Henrike Junge, ed., *Avantgarde und Publikum: Zur Rezeption avantgardistischer Kunst in Deutschland 1905-1933* (Cologne: Böhlau, 1992): 328-39. The Hungarian architect Alfred Forbat, working in Gropius' Berlin firm at the time, first saw *L'Esprit Nouveau* early in 1921 when he was asked to translate a text from it for Gropius. See Alfred Forbát, Letter to Karl-Heinz Hüter, 15-27 December 1967, Bauhaus-Archiv Berlin, Inv. No. 2852-54, page 3. See also Winfried Nerdinger, "Standard und Typ: Le Corbusier und Deutschland 1920-1927." In: von Moos, ed., *L'Esprit Nouveau: Le Corbusier und die Industrie*, 44ff. Nerdinger suggests that Gropius' access to the journal during 1921 was a major impetus for his shift towards functionalism.

40. Gladys Fabre, "The Modern Spirit in Figurative Painting: From Modernist Iconography to a Modernist Conception of Plastic Art," in: *Léger and the Modern Spirit*, 154. The broad range of topics, buttressed by the impersonal authority and therefore "collective" utility of science and mathematics, inspired Lajos Kassák and László Moholy-Nagy in their 1922 anthology *Buch neuer Künstler* (Vienna: Julius Fischer, 1922), and to a lesser extent Paul Westheim and Carl Einstein in their *Europa Almanach* (Potsdam: Gustav Kiepenheuer, 1925).
41. Le Corbusier and Ozenfant, "Des yeux qui ne voient pas... III: Les Autos," *L'Esprit Nouveau* no. 10 (8 May 1921): 845. On this statement, apparently taken from the program article in the first issue, see Fabre, "The Modern Spirit in Figurative Painting," 145.
42. On the contradictory nature of Le Corbusier's 1925 book *Vers une Architecture*, see von Moos, *Le Corbusier: Elements of a Synthesis*, 48-9. As Steadman puts it: "One should not expect anything too explicit or straightforward from Le Corbusier's writings." In: *The Evolution of Designs*, 140.
43. Von Moos, *Le Corbusier: Elements of a Synthesis*, 49.
44. Ozenfant and Le Corbusier parted ways in 1925. Subsequently they developed towards a biocentric position. By the time Ozenfant wrote *Foundations of Modern Art* in 1927-28, such elements were already coming to the fore. [Though the book appeared in 1929, Ozenfant dates the Preface of the first edition to "1927-28." See Ozenfant, *Foundations of Modern Art* (London: John Rodker, 1931), xiv.] Thus, Ozenfant takes the position that "our life is but one aspect of universal life, which perpetuates itself in other forms," even if his anthropocentric bias still causes him to privilege "man [as] a soloist in the universal orchestra." While for Ozenfant "natural forms are mechanistic, for they are the product of universal forces. And these very forces are in their turn transformed by mechanism," in the following sentences he goes on to occupy a biocentric position in which everything is natural: "The honey-bee is a relay that nature uses: mankind too, is a relay like the bee: machines are relays created by man, and the collaboration of men and machines creates natural objects which artificially we call artificial. ... does anything exist that can be called unnatural?" and in the following paragraph he declares "mechanical" laws to be "natural":
- A machine that turns out good work is a healthy machine: its organs rigorously satisfy mechanical, therefore natural, laws. Its products by degrees become stereotyped because the play of forces is unchanging and their effect is to compel such products into certain shapes, their optimum. But all this does not happen at once. Mechanical evolution

is comparable with natural evolution, the law of mechanical selection is comparable with the law of natural selection. (p. 151)

Here he unequivocally takes a biocentric, functional-determinist position on technological formation which organicizes machines. (It should be noted that fellow-Frenchman André Lurçat adopted an "organicist" view of architecture by 1929 as well: "On peut regarder une architecture comme on regarde un organisme vivant..." Lurçat, *Architecture, les Manifestations de l'esprit contemporain*. {Paris: Au Sans Pareil, 1929}; quoted in de Zurko, *Origins of Functionalist Theory*, 11.)

Le Corbusier's biocentric unconscious came to the fore after 1945 when, in his program of the "Modulor" he, as von Moos phrases it, "reacts to the alarming triumph of rationalism effected by the technocrats and the bureaucrats of the postwar boom by a retreat into a universe of antitechnological, vitalist, and organicist beliefs -- a romantic escape into nature." (Von Moos, *Le Corbusier: Elements of a Synthesis*, 312). Steadman also points out that Le Corbusier's thinking became increasingly biologicistic as time wore on. In his 1960 book *My Work*, for example, we find: "Biology! The great new word in architecture and planning!" (Quoted by Steadman in *The Evolution of Designs*, 140. See also page 147.)

45. Von Moos, *Le Corbusier: Elements of a Synthesis*, 309.

46. Le Corbusier, *The Modulor: A Harmonious Measure to the Human Scale Universally applicable to Architecture and Mechanics* (London: Faber and Faber, 1954), 25-7. See also his discussion of Golden Section researchers Matila Ghyka and Andreas Speiser on pp. 29-30.

47. Von Moos, *Le Corbusier: Elements of a Synthesis*, 309.

48. Le Corbusier and Ozenfant, "Nature & Création," *L'Esprit Nouveau*, no. 19 (December 1923): unpag.

49. Unsigned (Le Corbusier and/or Ozenfant?), in "Bilan d'une Génération," *L'Esprit Nouveau* no. 25 (July 1924): unpag.

50. Von Moos, *Le Corbusier: Elements of a Synthesis*, 39.

51. *Ibid.*, 50. He agrees with Collins. See *Changing Ideals in Modern Architecture*, 165-6.

52. Steadman has refined Collins' binary schema by pointing out that the organism is sometimes itself modelled as a machine ("machine-theoretical biology"), while the machine is in other cases conceived of as an organism. Steadman, *The Evolution of Designs*, 14-16.

53. Le Corbusier and Ozenfant, "Des yeux qui ne voient pas" On Le Corbusier and the machine analogy, see also Collins, *Changing Ideals in Modern Architecture*, 159-60.
54. Le Corbusier, "Sur la Plastique," *L'Esprit Nouveau* no. 1 (November 1920): 43. Republished in no. 14 (undated; ca. 1921): 1596. Published again in *Vers une Architecture*.
55. "La machine fait luire devant nous des disques, des sphères, des cylindres d'acier poli, d'acier taillé avec une précision de théorie et une acuité que jamais la nature ne nous montra." the emphasis is Le Corbusier's. *L'Art Décoratif d'Aujourd'hui*, IV.
56. Van Doesburg (pseud. I.K.Bonset), "Manifest 0,96013," *Mécano*, blue issue (1922).
57. See Sjarel Ex, "'De Stijl' und Deutschland 1918-1922: Die ersten Kontakte," in *Konstruktivistische Internationale Schöpferische Arbeitsgemeinschaft 1922-1927. Utopien für eine europäische Kultur* exh. cat. (Düsseldorf: Kunstsammlung Nordrhein-Westfalen, 1992), 73-9.
58. See my discussion of Mansbach's views at the start of Chapter Three. Van Doesburg's early poetry displays classic *kosmovitale Einsfühlung*. On his poetry "emphasizing experiences with Nature" and "mystical union" with "Eternity, with the Universe, with nature," see Hannah L. Hedrick, *Theo van Doesburg: Propagandist and Practitioner of the Avant-Garde, 1909-1923* (Ann Arbor: UMI Research Press, 1980), 41,44. On van Doesburg's "organic" aesthetics, see p. 138. As we have seen in Chapter Two, van Doesburg was familiar with von Uexküll's thought as early as 1915, when he cited him in a review of the exhibition "Moderne Kunst" held at the Stedelijk Museum in Amsterdam. (van Straaten, ed., *Theo van Doesburg 1883-1931*, 41). He later listed von Uexküll with Descartes, Darwin and Kant in his list of important sources on the nature of consciousness. See *Principles of Neo-Plastic Art* (1925) (London: Lund Humphries, 1968), 10.
59. John Elderfield, *Kurt Schwitters* (London: Thames and Hudson, 1985), 135.
60. Ernő Kállai, "Konstrukció -- kompozíció" [Construction -- composition] *Út [Way]* 2, no. 1 (15 April 1922): 2.
61. On Kállai's polarity, see Chapter One. In her article "Attribute des Konstruktivismus, Wucher traces this polarity, and in her discussion of Kállai's use of the term *életesség* [vitality], though she does not name *Lebensphilosophie*, she describes what amounts to Kállai's use of its categories in his Constructivist writings of the early 20s.

62. Ernő Kállai, "Technika és konstruktív művészet" [Technology and constructive art] *Ma* 7, no. 5-6 (1 May 1922): 7.
63. For evidence of Kállai's own biologism even at the height of his "anti-natural" Communist-Constructivist phase, see Kállai, "Korrektúrárt (A de Stijl figyelmébe)" [A correction (to the attention of de Stijl)] *Ma* 8, no. 9-10 (1 July 1923): unpag. Thus he writes of "art as a biological *pozitívum* [positive factor]," and of mass organizations as "biological possibilities and necessities."
64. Kassák, in Vienna at the time, learned of these developments from Uitz earlier, as Uitz claims to have sent him a package during the summer of 1921. On the process of the transmission of information on Russian Constructivism to Berlin, see Oliver Botar, "Constructivism, International Constructivism and the Hungarian Emigration." In John Kish, ed., *The Hungarian Avant-Garde, 1914-1933*. exh. cat. (Storrs, Conn.: The W. Benton Museum of Art, 1987).
65. Ibid.
66. On this circle see Werner Graeff, "Concerning the so-called G Group," *Art Journal* 23 no. 4 (280-3). Note that while Stephen Bann reinvented the term "International Constructivism" in his anthology published in 1974, Raoul Hausmann had used the term in the subtitle to his "Zweite präsentistische Deklaration: Gerichtet an die Internationalen Konstruktivisten," published in the unpaginated *Ma* 8 no. 5-6 (15 March 1923). See Bann, Introduction to *The Tradition of Constructivism*, xxxii. On the origins of International Constructivism, see also Bann, "Russian Constructivism and its European Resonance," in Ansel, et al., eds., *Art Into Life*, 213-21.
67. See Botar, "Constructivism, International Constructivism and the Hungarian Emigration"; Botar, "From the Avant-Garde to 'Proletarian Art': The Emigré Hungarian Journals *Egység* and *Akasztott Ember*, 1922-23." *Art Journal* 52, no. 1 (Spring 1993): 34-45; and Botar, "From Avant-Garde to 'Proletcult' in Hungarian Émigré Politico-Cultural Journals, 1922-24." In: Virginia H. Marquardt, ed., *Art and Journals on the Political Front, 1910-1940*, (Gainesville: University of Florida Press, 1997). Occasionally an article or an entire issue of *Ma* would appear in German.
68. See Willett, *Art and Politics in the Weimar Period*, 74-6. As neither editor had been directly involved with Rodchenko's circle, this was still not the "real thing," and was received with surprise in Moscow Constructivist circles. See: Wassilij Ratkin, "'Vorwärts, zur Rekonstruktion der Welt': Episoden aus der Geschichte einer Kunstpolemik." in: *Konstruktivistische Internationale*, 68-72.

69. On this, see Ulrike Gärtner, "'Es kommt der neue ingenieur!' Zum Selbstverständnis der Künstler-Ingenieurs Werner Graeff," in *Konstruktivistische Internationale*, 129-32.
70. See "Organic Construction: Harnessing an Alternative Technology," in Christina Lodder, *Russian Constructivism* (New Haven: Yale University Press, 1983), 205-23.
71. Patricia Railing, "'The Machine is no More Than a Brush': Morphology of Art and the Machine in Russian Avant-Garde Theory and Practice," *The Structurist* no. 35-36 (1995-96): 50.
72. *Ibid.*, 49. On Moholy-Nagy's similarly biocentric view of Faktur, see Andreas Haus, *Moholy-Nagy: Photographs and Photograms*. Frederic Samson, transl. (New York: Pantheon, 1980), 28.
73. The famous photograph of George Grosz and John Heartfield holding the placard reading "Die Kunst ist tot. Es lebe die neue Maschinenkunst Tatlins" was published in Richard Huelsenbeck, *Dada-Almanach* (Berlin: Erich Reiss, 1920), 41. On this misunderstanding, see John Milner, *Vladimir Tatlin and the Russian Avant-Garde* (New Haven: Yale University Press, 1983), 1-2.
74. Lissitzky's article on Russian architecture was one of the only pieces in the West to discuss Tatlin's "Monument to the Third International" in organicist terms. Lissitzky, "Architektur Russlands," *ABC* no. 3-4 (1925): 1-2. The examination of Lissitzky and organicism was begun by Peter Nisbet in *El Lissitzky 1890-1941* (Cambridge Mass.: Harvard University Art Museums/Busch-Reisinger Museum, 1987), 28-30; and has been continued by Manuel Corrada in "Mechanical and Organic Form in the Theory and Art of El Lissitzky," *The Structurist* no. 34-5 (1995-96): 57-63 and Railing in "'The Machine is no More than a Brush'."
75. Kai-Uwe Hemken, "'Muss die neue Kunst den Massen dienen?' Zur Utopie und Wirklichkeit der 'Konstruktivistischen Internationale,'" in: *Konstruktivistische Internationale*, 58. While Arp was an Alsatian who later chose French nationality, at this stage he was still a German-born German citizen.
76. *Ibid.*
77. See Graeff, "Concerning the so-called G Group."
78. Hausmann, Arp, Puni and Moholy-Nagy, "Aufruf zur elementaren Kunst," Berlin, October 1921. (*De Stijl* no. 10, October 1921). Bernd Finkeldey began reinterpreting the manifesto in his "Elementarismus: Grundlagenforschung für eine neue Gestaltung," in *Konstruktivistische Internationale*, 107-10.

The literature on what is, in effect, Arp's biocentrism, is prodigious. See, e.g., Rolf Wedewer, "Zur Naturvorstellung Arps," *Pantheon* 43 (1985): 171-78; Margherita Andreotti, "A New Unity of Man and Nature: Jean Arp's Growth of 1938," *Museum Studies* (Art Institute of Chicago) 16 no. 2 (199): 132-45; Janet Landry, "Between Art and Nature: The Metamorphic Sculpture of Jean Arp," *Bulletin of the Detroit Institute of Arts* 61, no. 4 (1984): 15-21; and Jane Hunter Hancock, in Hancock and Stefanie Poley, *Arp 1886-1966* (Cambridge: Cambridge University Press, 1986), 62-7. On Arp's Monism, see p. 177. On Arp's friendship with the biocentric psychologist Hans Prinzhorn ("wie ein Kaninchen mit einer Schlange" according to Hans Richter), see p. 59 of *G* no. 3 (June 1924).

On Moholy and Kemény's manifesto, see below.

79. Hausmann, Arp, Puni and Moholy-Nagy, "Manifesto of Elemental Art."

80. Raoul Hausmann, "Wir sind nicht die Photographen" (n.d. c. 1921) in: Hausmann, *Sieg Triumph Tabak mit Bohnen*, 59. On Hausmann and Ernst Marcus' radical psychobiology, see Chapter Three.

81. Raoul Hausmann and László Péri, "Die Absichten des Theaters 'Pré'," *Der Sturm* (September 1922): 138; László Moholy-Nagy and Alfréd Kemény, "Dynamisch-konstruktives Kraftsystem," *Der Sturm* (December 1922): 186. On the Ostwaldian-Monist nature of this latter manifesto, see János Brendel, "Der deutsche Einfluss von Scheerbart und Wilhelm Ostwald auf die ungarische Konstruktivistentheorie," in Hubertus Gassner, ed., *Wechselwirkungen: Ungarischer Avantgarde in der Weimarer Republik* (Marburg: Jonas, 1986), 175-77.

82. Jack Burnham, *Beyond Modern Sculpture. The Effects of Science and Technology on the Sculpture of this Century* (New York: George Braziller, 1968), 9.

83. Paul Westheim, "Das 'Ende des Expressionismus,'" *Das Kunstblatt* 4, no. 6 (June 1920): 188. Translation by Ian Boyd Whyte in his *Bruno Taut and the Architecture of Activism* (Cambridge: Cambridge University Press, 1982), 216. On this, see Joan Weinstein, *The End of Expressionism: Art and the November Revolution in Germany, 1918-19* (Chicago: University of Chicago Press, 1990), 231f. For the wider context, see Washton-Long, ed., *German Expressionism*, "The Critics and the Demise of Expressionism," 279ff. On Walden's and Westheim's libelous rivalry of the time, see Lutz Windhöfel, "Paul Westheim," 331.

84. In an ironic unsigned piece directed against Herwarth Walden (probably by Westheim) entitled "Bemerkungen." *Das Kunstblatt* 5, no. 1 (January 1921): unpag.

85. Herwarth Walden, "Technik und Kunst," *Der Sturm* (April 1921): 68. On the origins of functionalism in organicist aesthetic theory, see Caroline van Eck, *Organicism in Nineteenth-Century Architecture* (Amsterdam: Architectura & Natura Press, 1994).
86. Paul Westheim, "Gegenstandlose Kunst," *Das Kunstblatt* 5, no. 4 (April 1921): 114.
87. *Ibid.*, 121.
88. Paul Westheim, "Kunst in Frankreich: L'Esprit," *Das Kunstblatt* 6, no. 1 (January 1922): 8. See also: Westheim, "Kunst in Frankreich: Vorbemerkungen," *Das Kunstblatt* 5, no. 11 (November 1921): 357-62 and "Bildhauer aus Frankreich," *Das Kunstblatt* 6, no. 2 (February 1922): 47-56. Note that there was an exhibition of Cézanne's work at Cassirer's gallery in Berlin the previous November. See: Brassai, *Előhívás. Levelek (1920-1940)* [Photographic Development. Letters (1920-1940)] (Bucharest: Kriterion, 1980), 38.
89. Westheim had shown Monistic and nature-centric tendencies earlier already. See, e.g., his article "Die Landschaft" in which he writes almost nostalgically about the time before the Renaissance: "Das Bewusstsein einer solchen allwaltenden und allgestaltenden geistigen Kraft war für die mittelalterliche Menschheit das, was Goethe und Humboldt im Reich der Natur suchten: Die Universalität, die innere Einheit des Alls..." *Das Kunstblatt* 4, no. 1 (January 1920): 9-10. Westheim's campaign against what he saw to be the excesses of Expressionism did not prevent him from publishing Paul F. Schmidt's "Das Recht auf Romantik" that same year, however, in which Schmidt praises the pantheistic/Monistic aspects of ancient and recent art. *Das Kunstblatt* 4, no. 11 (November 1920): 321-25.
90. Fernand Leger, "Kurzgefasste Auseinandersetzung über das aktuelle künstlerische Sein," *Das Kunstblatt* 7, no. 1 (January 1923): 1.
91. Raoul H. Francé, "Die sieben technischen Grundformen der Natur," *Das Kunstblatt* 8, no. 1 (January 1923), 5-11. Excerpt from: Francé, *Die Pflanze als Erfinder*. In English: *Plants as Inventors* (New York: Albert and Charles Boni, 1923). Francé, *Die technischen Leistungen der Pflanze* (Leipzig: Verlag von Veit & Comp., 1919) While Francé wrote of *Biotechnik* in this book, the concept of the "sieben technischen Grundformen der Natur" was only incompletely developed here. It is also characteristic that Francé's piece is followed a few pages later by an unsigned article defining Theosophy and Anthroposophy as a "Theologie der Natur." "Theosophie und Philosophie," 22-3.
92. Francé, *Plants as Inventors*, 11.

93. For a brief history of this idea (made famous and perhaps introduced into the field of architecture by Sullivan's "form follows function"), see Collins, *Changing Ideals in Modern Architecture*, 155. For a longer history, see de Zurko, *Origins of Functionalist Theory*. As Vitale points out, Sullivan's adage was itself related to biocentrism: "Les écrits de Sullivan montrent clairement que déjà pour lui la fonction va bien au-delà d'une conception mécaniste. Elle prend une signification éthique, sociale, organique, vitaliste, voire politique et même nationaliste." Eliode Vitale, "L'enseignement au Bauhaus de Weimar (1919-1925)" (Doctorat d'Etat, Université de Paris VIII, 1985), 44.

94. Francé, *Plants as Inventors*, 11.

95. Ibid., 19.

96. Ibid., 16.

97. Ibid., 17. It is hard to tell from the plans and photographs whether there was no cone in the *Lichtrequisit*; perhaps it appears as a virtual volume or as a shadow projection. In any case, it is almost as if in compensation for this lack that Moholy features transparent cone shapes so prominently in his set design highly reminiscent of the "Light-Space Modulator" for Alexander Korda's film *Things to Come*, an image of which he used for the title page of the first brochure for The New Bauhaus in Chicago in 1937. See Passuth, *Moholy-Nagy* (1985), fig. 197. Not surprisingly, Moholy began work on the *Lichtrequisit* in 1922, just before he encountered Francé's writings on the *Grundformen*. He completed work on the stage prop in 1930, in time to be shown in his theatre section of the German Werkbund's contribution to the Exposition des Arts décoratifs in Paris in the summer of 1930. See the description of the Werkbund section in Richard P. Lohse, *New Design in Exhibitions* (Erlenbach-Zurich: Verlag für Architektur, 1953), 20-27. See also Veit Loers, "Moholy-Nagy's 'Raum der Gegenwart' und die Utopie vom Dynamisch-Konstruktiven Lichtraum" in Loers, ed., *Moholy-Nagy*, 49.

98. Ibid., 18.

99. On Francé's work on *Biotechnik*, see Annie Francé-Harrar, *So war's um Neunzehnhundert: Mein fin de siècle* (Munich: Albert Langen/Georg Müller, 1962), 141-8. She dates the "birth" of *Biotechnik* to 16 September 1916, and the public use of this term in German to 1920 the year *Die Pflanze als Erfinder* was published in the Kosmos series of popular scientific books. (p. 147, 141) For a more objective account of Francé's role in the development of biotechnology (one of the few areas in which a secondary literature has developed on him), see Robert Bud, *The Uses of Life: A History of Biotechnology*

(Cambridge: Cambridge University Press, 1995), especially 60-3. See also Steadman, *The Evolution of Designs*, Chapter 11: "Biotechnics: Plants and Animals as Inventors"; and R. R. Roth, "The Foundation of Bionics," *Perspectives in Biology and Medicine* 26, no. 2 (Winter 1983): 229-42.

100. Francé, *Plants as Inventors*, 20-21.

101. D'Arcy Wentworth Thompson, *On Growth and Form* (Cambridge, 1917). (I refer here to the abridged edition: Cambridge: Cambridge University Press, 1961.) Thompson also posited a geometrical basis for organic entities as well as an idea akin to *Biotechnik* (on this, see chapter 8, "On Form and Mechanical Efficiency"). Note also the similarity between Thompson's "form as a diagram of forces" and Francé's views on formation: "Cell and tissue, shell and bone, leaf and flower, are so many portions of matter, and it is in obedience to the laws of physics that their particles have been moved, moulded and conformed." (p. 7) "The form, then, of any portion of matter, whether it be living or dead, and the changes of form which are apparent in its movements and in its growth, may in all cases alike be described as due to the action of force. In short, the form of an object is a 'diagram of forces....'" (p. 11). For Thompson's discussion of spiral form in nature, see Chapter 6. See also Martin Kemp, "Doing What Comes Naturally: Morphogenesis and the Limits of the Genetic Code," *Art Journal*, 55, no. 1 (Spring 1996), 27-32, Steadman, *The Evolution of Designs*, 13-14 and Werner Hahn, *Symmetrie als Entwicklungsprinzip in Natur und Kunst* (Königstein: Langewiesche, 1989). On others at the time who were publishing on *Biotechnik*, see Bud, *The Uses of Life*.

102. On Westheim's support for van de Velde since 1914, and his opposition to the "machine aesthetic," see Windhöfel, "Paul Westheim," 331, 337. For Westheim's polemical reference to Mies' domestic architecture as a "Wohnorganismus" (rather than a *Wohnmaschine*), see Westheim, "Mies van der Rohe: Entwicklung eines Architekten," *Das Kunstblatt* 11 (1927): 60. (C.f. Ebeling's phrase "Hausorganismus" of 1926, quoted at the start of this chapter.) In his review of the Bauhausausstellung Westheim also made fun of the Bauhaus' "Quadratstil," i.e. of orthogonal geometric formalism. See: "Bemerkungen: Zur Quadratur des Bauhauses," *Das Kunstblatt* 7, no. 10 (October 1923): 319-20.

103. Paul Westheim, "Maschinenromantik," *Das Kunstblatt* (February 1923): 37-8.

104. Ibid. Einstein and Westheim's interest in biocentrism and the arts is also indicated by the inclusion in the *Europa Almanach* of Fritz Landsberger's article "Georg Simmel" (75-9), El Lissitzky's "K. und Pangeometrie" (103-12), a plan and

photographs of Hugo Häring's manifesto of organic architecture "Gut Gurkau" (122-3), Rudolf Grossmann's brief writings on Scheler, Kubin, Spengler and Keyserling (151-3) and Max Möckel's article on the golden section (258-61).

105. By publishing Ozenfant and Le Corbusier's "Nature & Création" in German translation, including their statement (quoted above in French) that "Die Natur ist für den Menschen eine äussere Tatsächlichkeit, sie ist vielfältig, grenzenlos, im allgemeinen unfassbar," Westheim was pointing up this difference in their thinking on the issue of nature. See: "Natur und Gestaltung," *Das Kunstblatt* 8, no.3 (March 1924): 65. On van de Velde c.f. Sebastian Müller, "Ornament als Ausdruck der organischen Panfunktionalität der Natur (van de Velde)" in his *Kunst und Industrie* (Munich: Carl Hanser Verlag, 1974), 61-70.

106. See Hans Hartmann, "Die Spirale im bildnerischen Denken von Paul Klee," in Hans Hartmann and Hans Mislin, *Die Spirale im menschlichen Leben und in der Natur: Eine interdisziplinäre Schau* (exh. cat.) Basle: Museum für Gestaltung, 1985), 94-98. Probably in the fall of 1923 Klee wrote of cross sections: "The object grows beyond its appearance through our knowledge of its inner being, through the knowledge that the thing is more than its outward aspect suggests. Man dissects the thing and visualises its inside with the help of plane sections ... This is visible penetration, to some extent that of a simple knife, to some extent helped by finer instruments which make the material structure or material function clear to us." Paul Klee, *Notebooks*, Vol. 2, *The Nature of Nature*. Jürg Spiller, ed.; Ralph Manheim, transl. (Woodstock, N.Y.: The Overlook Press, 1992), 288. Klee's teaching was coincident with -- indeed it perhaps directed -- the emergent interest in scientific imagery at the Bauhaus. Thus Carl Koch's scientific films were shown on 18 August 1923, during the Bauhauswoche in Weimar, the concluding event series of that summer's Bauhaus exhibition. "Erziehungsfilm und Filme der UFA-Kulturabteilung: Mikroskopische, Zeitlupen- und Zeitrafferaufnahmen" Program reproduced in Wulf Herzogenrath, ed., *50 Years Bauhaus* (exh. cat.) (Stuttgart: Württembergische Kunstverein/Darmstadt: Bauhaus-Archiv/Toronto: Art Gallery of Ontario, 1969), 314.

107. Lajos Kassák, "Képarchitektúra." "Originally published in September 1921 as a pamphlet, "Képarchitektúra" appeared again in *Ma* 7, no. 4 (15 March 1922): 54. For a discussion of the manifesto and a translation by George Cushing (revised by Oliver Botar), see Oliver Botar, "Constructed Reliefs in the Art of the Hungarian Avant-Garde: Kassák, Bortnyik, Uitz and Moholy-Nagy 1921-1926," *The Structurist* no. 25-26 (1985-86): 87-98.

108. Wijdeveld, "Natuur, Bouwkunst en Techniek."

109. While "The spiral fascinated Le Corbusier because [quoting Le Corbusier] it follows 'natural laws of growth, laws which underlie all manifestations of organic life,'" as von Moos points out, "in Corbusier's work the spiral remained an abstract concept; it never became a powerful architectural image." von Moos, *Le Corbusier: Elements of a Synthesis*, 100. On the importance of the spiral form for Lissitzky at this time, see below. See also: Hans Hartmann, and Hans Mislin, *Die Spirale im menschlichen Leben und in der Natur: Eine interdisziplinäre Schau* exh. cat. (Basle: Museum für Gestaltung, 1985) and *Spiralen und Progressionen* (exh. cat.) (Luzern: Kunstmuseum Luzern, 1975). C.f. also Moholy-Nagy's student and later colleague at the Bauhaus, Joost Schmidt's photograph of a nautilus-like shell from ca. 1929-32 in: Jeanine Fiedler, ed., *Photography at the Bauhaus* (Cambridge: MIT Press, 1990), no. 249, p. 317. For Ernst Fuhrmann's discussion of the spiral in ancient and "primitive" decorative art, see *Der Sinn im Gegenstand* (Munich: Georg Müller, 1923), 19, a book owned by, for example, Mies van der Rohe.

110. A reproduction of *Nikkelplastik mit Spiral* was included in the *Buch neuer Künstler*, which appeared in September of 1921, and in *Ma* 7, no. 5 (1 May 1922): 14. Ivan Punin's article "Tatlin's Tower" -- concerning the *Monument to the Third International* -- appeared in *Veshch* no. 1-2 (March-April 1922) and translated as "Tatlin üvegtornya" [Tatlin's glass tower] appeared in that same issue of *Ma* the following month, on page 31. On the *Dynamisch-konstruktiven Kraftsystem, Von Material zu Architektur*, 204.

111. Klee, notes of 3 July 1922, quoted in Hartmann, "Die Spirale im bildnerischen Denken von Paul Klee," 94. See Klee's notes on "movement as action and form," apparently of 20 March 1922, in Paul Klee, *Notebooks*, Vol. 1, *The Thinking Eye*. Jürg Spiller, ed., and Ralph Manheim, trans. (Woodstock, N.Y.: The Overlook Press, 1992), 369-400. Note that the dating of the notes in these volumes is not dependable. On this, see Frank Whitford, "The Thinking Eye at Work," *The Times Literary Supplement* (8 April 1994): 11.

112. Paul Klee, unpublished pedagogical term plans, 23 October 1923. Bauhaus, Weimar. Paul Klee Stiftung Bern. Transcribed by Katalin von Walterskirchen, n.d. [ca. 1960], p. 1. Klee was fascinated not only by natural structures, but by dynamic systems in nature, what Francé called *Biozönose*. What is significant is that Francé was well-known for emphasizing his view that -- rather than of static structures -- the *Bios* consisted of a multitude of interacting and interpenetrating systems in search of or in equilibrium. For example, see "The Plant," from a lecture of 27 February 1922, where Klee describes the growth of plants in dynamic, systems terms. (Klee, *The Thinking Eye*, 351) On the meteorological cycle of

precipitation as a system, see Klee, *The Nature of Nature*, 91-97. After this discussion of the meteorological system in our environment, Klee goes on to make the point that "We carry a circulatory system of similar nature within us, without being aware of it. This is the circulation of the blood." (Klee, *The Nature of Nature*, 101) On Klee's views of growth see also Wiedmann, 202 ff.

113. Klee, pedagogical notes, 5 November 1923. Source: p. 8. Note that Klee's tendency to view plants as dynamic beings parallels Francé's and Ernst Fuhrmann's views, such as those expressed in Francé's *Die technische Leistungen der Pflanze* and Fuhrmann's *Die Welt der Pflanze* series (Berlin: Auriga-Verlag, 1924-). On this see Ernst-Gerhard, Güse, ed., *Paul Klee: Dialogue with Nature* (Munich: Prestel, 1991), 62.

114. Klee, pedagogical notes of 23 November 1923, *The Nature of Nature*, 293.

115. Spiller in Klee, *Notebooks*, Vol. 2, *The Nature of Nature*, 289. Spiller is no more specific than this, though the context into which he places the single photograph he reproduces suggest that it is placed near the notebook entry of 20 November 1923. As the "Schelpennummer" of Wendingen had just appeared a couple of months previous, this is a plausible dating.

116. *Wendingen* was probably the most important organicist architectural and art journal of the time. On the organicism of *Wendingen*, see: Wim de Wit, "'Wendingen', la Scuola di Amsterdam e Wijdeveld," in: *Wendingen 1918-1931. Documenti dell'arte olandese del Novecento* (exh. cat.) (Florence: Centro Di and Palazzo Medici-Riccardi, 1982), 28ff. On Wijdeveld's biocentrism, see below.

117. Roland Holst, "Schelpen. De Wondervormen der Zee, Vreemde Gelijknissen," "Schelpennummer," 3-5; Wijdeveld, "Natuur, Bouwkunst en Techniek," "Schelpennummer," 12-15. On the organicism of these essays, see: de Wit, "'Wendingen', la Scuola di Amsterdam e Wijdeveld," 28-9.

118. Wijdeveld, "Natuur, Bouwkunst en Techniek," 12.

119. Ibid.

120. Josef Maria Eder and Eduard Valenta, *Versuche über Photographie mittelst der Röntgen Strahlen* (Halle: Knapp, 1896).

121. El Lissitzky reproduced a Polak x-ray photo in "K. und Pangeometrie," 110. This is discussed below. Lissitzky was soon doubly sensitized to X-rays, for he had to submit to their penetrating gaze while being diagnosed with tuberculosis

in Hannover late in 1923. Moholy-Nagy reproduced two of Polak's images from *Wendingen* in: László Moholy-Nagy, *Malerei, Photographie, Film* (Munich: Albert Langen, 1925), 66, 68. Le Corbusier reproduced one of Eilers' photographs of two shells with the caption "Esprit de Vérité" in *L'Art Decoratif D'aujourd'hui*, 167. We know from Kállai's review of Karl Blossfeldt's *Urformen der Kunst* (1928) in *bauhaus* 3 no. 1 (January 1929: 27) that Kállai had been struck by these images as well at the time. See Adolf Behne's reference to the "Schelpennummer" in *Der Moderne Zweckbau*, 51.

122. Lewis Mumford, *Technics and Civilization* (New York: Harcourt, Brace and World, 1934), Plate XII: "Nature and the Machine," 341. On this, and on the popularity of the spiral, see Thomas P. Hughes and Agatha C. Hughes, *Lewis Mumford: Public Intellectual* (Oxford: Oxford University Press, 1990), 198-202.

123. See Steadman, *The Evolution of Designs and Wendingen 1918-1931. Documenti dell'arte olandese del Novecento* exh. cat. (Florence: Palazzo Medici-Riccardi, 1982).

124. Though the scientific imagery reproduced in *L'Esprit Nouveau* at this time illustrated scientific articles, it was in effect aestheticized through its inclusion in an art journal. This highly successful issue of *Wendingen* was followed in 1924 with a special issue on crystals, which also enjoyed success.

125. In discussing this, I am building on the work of John Elderfield in his book *Kurt Schwitters*, pp. 133-40.

126. László Moholy-Nagy and Alfréd Kemény, "Dynamisch-konstruktives Kraftsystem," *Der Sturm* (December 1922): 186.

127. Egon Engelen, "Konstruktivismus és proletáriátus" [Constructivism and Proletariat] *Ma* 8, no. 7-8 (1 May 1923): unpag. Translated by Oliver Botar.

128. Ernst Fuhrmann, *Der Sinn im Gegenstand* (Munich: Georg Müller, 1923), 29. The copy I read is from the library of Mies van der Rohe, in the Department of Special Collections of the University Library, University of Illinois at Chicago.

129. Hans Arp and El Lissitzky, eds., *Die Kunstisten* (Zurich: Eugen Rentsch, 1925), XI. The English of the original is flawed.

130. El Lissitzky, letter to Sophie Küppers, 10 March 1924. In: Lissitzky-Küppers, *El Lissitzky*, 46. Reprint: Baden: Lars Müller, 1990.

131. László Moholy-Nagy, "Kunstbetrachtung = Weltbetrachtung," *Offset- Buch- und Werbekunst* no. 6 (1925): 345.

132. Entomology also recurs in his article "bauen" (*bauhaus* 1928, 4, 12-13. On the importance of gardens and nature in Meyer's thought see also "der garten als erweiterung des wohnraums," in Stefan Kraus, "bauen ist ein biologischer vorgang -- Hannes Meyer," in: Wulf Herzogenrath and Stefan Kraus, eds., *Bauhaus Utopien. Arbeiten auf Papier* (Stuttgart: Edition Cantz, 1988), 282

133. Ebeling, *Der Raum als Membran*, 30.

134. Walter Rietzler, "Einheit der Welt," *Die Form*, 2, no. 8 (1927): 248.

135. Gustav Hartlaub, "Rückblick auf den Konstruktivismus," *Das Kunstblatt* 11 (1927): 262.

136. Moholy-Nagy, *Von Material zu Architektur*, 69. While published in 1929, the book is dated to September 1928 in the Foreword.

137. *Ibid.*, 177.

138. Ernő Kállai, "Ideen und Organisationsentwurf zu einer Internationalen Ausstellung moderner Kunst im Leipziger Museum mit dem Namen 'Kunst und Wirklichkeit' eventuell mit dem Untertitel 'Das neue Weltbild der Kunst'" (13 May 1931) Type-script in the Archives of the Art Historical Research Group of the Hungarian Academy of Sciences, Budapest (MDK-C-I-11/5730), p. 11.

139. László Moholy-Nagy, "The New Bauhaus and Space Relationships," *American Architect and Architecture* (1937). In: Richard Kostelanetz, ed., *Moholy-Nagy* (New York: Praeger, 1970), 105.

140. Typically, Alois Martin Müller, author of the essay published to accompany the reprint of *Die Kunstisten*, contrasts Arp's and Lissitzky's views of Constructivism as a nature-centric versus a techno-centric one, despite the obvious evidence to the contrary in the agreed-upon definition of the term published in the book. Useful, however, is Müller's point that "rather than construction alienated from nature [Arp] envisions 'concretion' approaching nature." Müller, "The Last Parade: The Isms of Art 1914-1924," looseleaf insert in the Reprint edition of *Kunstisten*.

141. Kállai, "Kunst und Technik," *Sozialistische Monatshefte* 37, no. 11 (November 1931): 1101-2 and "Kunst und Wirklichkeit" *Sozialistische Monatshefte* 37, no. 10 (October 1931):

998, respectively. On this, see Gábor Pataki, "Technoromantik," in Gassner, Kopanski and Stengel, eds., *Die Konstruktion der Utopie*, 203-8.

142. Stanislaus von Moos, "The Visualized Machine Age," in Hughes and Hughes, eds., *Lewis Mumford: Public Intellectual*, 407, endnote.

143. Raoul Hausmann, "Manifest der Natur" (unpublished text of c. 1921). In: Hausmann, *Sieg Triumph Tabak mit Bohnen*, 46.

144. Raoul Hausmann, "Maikäfer Flieg! Manifest von allen Möglichen," (unpublished text of ca. 1922). In: Hausmann, *Sieg Triumph Tabak mit Bohnen*, 64.

145. Eggeling and Hausmann, "Zweite präsentistische Deklaration," unpag. It should be noted that several of Hausmann's most important biocentric texts appeared in *Ma*, evidently as a result of his friend Moholy-Nagy's efforts as *Ma*'s Berlin correspondent. See Illona Illés, *A Tett (1915-1916) Ma (1916-1925) 2X2 (1922) Repertórium* (Budapest: Petöfi Irodalmi Múzeum, 1975), entries 440-41; 1411, 1419.

146. On Marcus, see Chapter Three. On *Empiriokritizismus*, see Chapter Two. The ideas of the "Zweite präsentistische Deklaration" are developed in Hausmann's "Egyetemes szervmüködés" [Universal sensory functioning] (*Ma*, 8, no. 7-8 {1 May 1923}: unpag), another of his speculative articles based on the thought of Marcus, but here focusing on the Lamarckian possibility of humans extending their sensory and communicative abilities; ideas related to contemporary speculative applied science such as Francé's *Biotechnik*, and particularly Mikhail Matiushin's experiments with *Zorved* (See-Know) announced at INKhUK on 13 April 1923. Marcus' book, *Das Problem der exzentrischen Empfindung und seine Lösung* (Berlin: Der Sturm, 1918), was brought to the Hungarians' attention by Hausmann, and was reviewed by Kassák's assistant of the time, Endre Gáspár, in *Ma* 9 no. 2 (15 November 1923): unpag. On *Zorved*, see, e.g., Lodder, *Russian Constructivism*, 206. C.f. also Raoul Hausmann, "Optophonetik," *Ma* 7, no. 1 (15 October 1922): 3-4. Reprinted in: Hausmann, *Sieg Triumph Tabak mit Bohnen*, 52.

147. The quotation is from Hausmann's review of Francé's *Die Kultur von Morgen*, "Intellektualismus, Gesellschaft und Gemeinschaft," *Die Aktion* (15 July 1923): 347. See: Raoul Francé, *Die Kultur von Morgen: Ein Buch der Erkenntnis und der Gesundung* (Dresden: Reissner, 1922). On Hausmann's Anarchism, see his "Zu Kommunismus und Anarchie," *Der Einzige* 1, no. 2 (26 January 1919): 5-7, signed as "Panarchos"; and "Der individualistische Anarchist und die Diktatur," *Die Erde* 1, no. 9 (1 May 1919): 276-8. Reprinted in Raoul Hausmann, *Bilanz der Feierlichkeit. Texte bis 1933*. Volume 1. Michael Erlhoff, ed.,

(Munich: Text + Kritik, 1982). See also his "Durch Kommunismus zur Anarchie" and "Entgegnung auf Lenins Polemik gegen die Anarchimus," typescripts in the Hannah Höch Archive at the Berlinische Galerie, Berlin, published in: Hannah Höch, *Eine Lebenscollage*, Volume 1: 534-6.

148. György Lukács offered a similar analysis: "man in capitalist society confronts a reality 'made' by himself (as a class) which appears to him to be a natural phenomenon alien to himself; he is wholly at the mercy of its 'laws', his activity is confined to the exploitation of the inexorable fulfilment of certain individual laws for his own (egoistic) interests.... Thus the word 'nature' become highly ambiguous." Lukács, "Reification and the Consciousness of the Proletariat" in: *History and Class Consciousness: Studies in Marxist Dialectics* (Cambridge: MIT Press, 1971), 135.

149. Raoul Hausmann, "Der Häusserbund bekommt 22,800 Stimmen!" *Die Aktion* (24 May 1924). In: Hausmann, *Sieg Triumph Tabak mit Bohnen*, 89.

150. Ibid.

151. Hausmann, "Chaoplasma," *Merz* (July 1923). Reprinted in Hausmann, *Sieg Triumph Tabak und Bohnen*, 75. Note that Benton dates this poem to 1920, but this does not exclude the possibility of the timing of its publication as a comment on Francé's book. Benton, *Raoul Hausmann and Berlin Dada* (Ann Arbor: UMI Research Press, 1982), 152-3.

152. Hausmann, "Ausblick," 15-16. Hausmann employs Francéan terms and term-adaptations such as "Heliobiocönose," "biotechnischen," "sieben Grundformen," and "kosmo-biotechnischen."

153. For Francé's problematic relationship with the Nazis, see Chapter Two. On Hörbiger and the Nazis, see Brigitte Nagel, *Die Welteislehre: Ihre Geschichte und ihre Rolle im "Dritten Reich"* (Stuttgart: Verlag für Geschichte der Naturwissenschaften und der Technik, 1991). In a letter to van Doesburg of 26 August 1924 written near Schwarzerden in the Rhön mountains, Moholy-Nagy says "Das was Hausmann -- etwas snobistischer Weise -- auf dem gebiet der Eiskristallisation der Sonnensysteme und anderer rätselhaften kosmischen Vorgänge versucht, müsste auf viel positiverem Gebiete unseres hygienischen Verhaltens, pädagogischer Übungen, in dem gleichgewichtsschaffender Übertreibung mechanischer Funktionen etc. durchgeführt werden." Appendix, Theo van Doesburg, *Grondbegrippen van de nieuwe beeldende kunst* (Nijmegen, SUN, 1983), 109.

154. Hausmann, "Ausblick," 17.

155. "Gr.," untitled text, *G*, no. 2 (September 1923), back cover. On Graeff and the De Stijl seminar, see Ex, "De Stijl and Deutschland;" Kai-Uwe Hemken and Rainer Stommer, "Der 'De Stijl'-Kurs von Theo van Doesburg in Weimar (1922)," in *Konstruktivistische Internationale*, 169-77. While Francé is discussed but not mentioned in *G*, through his friendship with Hans Arp and Mies van der Rohe, the biocentric psychiatrist Hans Prinzhorn was published in it. Prinzhorn's "Gestaltung und Gesundheit" is on pages 52 and 53 of *G* no. 3 (June 1924) and a further excerpt from his *Bildnerie der Geisteskranken: Ein Beitrag zur Psychologie und Psychopathologie der Gestaltung* (Berlin, 1923), is in issue 5-6 (April 1926): 133.

156. An abridged translation of Engelién's text, misattributed to Moholy, appeared in Kostelanetz, ed., *Moholy-Nagy*, 185-6; and was reprinted (still misattributed) in Benton, Benton and Sharp, eds., *Form and Function*, 95. On Engelién's participation in van Doesburg's "De Stijl Course" see Hemken and Stommer, "Der 'De Stijl'-Kurs von Theo van Doesburg in Weimar (1922)," 175. On Engelién see pp. 308-09.

157. Mies van der Rohe, "Bauen," *G* no. 2 (September 1923), cover.

158. "Form is not what we are aiming at, it is merely the outcome of our work." "There is no form by itself; form as an end in itself means formalism, and that we reject." "Really perfect form is always conditioned, is deeply rooted in the task; in fact, it is its most elementary expression." Letter from Mies to Werner Jakstein of 13 September 1923, quoted in Wolf Tegethoff, "From Obscurity to Maturity: Mies van der Rohe's Breakthrough to Modernism," in Franz Schulze, ed., *Mies van der Rohe: Critical Essays* (New York: MOMA, 1989), 47, 48.

159. Mies van der Rohe, "Lieber Herr Dr. Rietzler!" in *Die Form* 2, no. 1 (January 1927): 1. On *Die Form*, see *Die Zwanziger Jahre des Deutschen Werkbunds* (Berlin: Werkbund-Archiv/Anabas, 1982), 33ff.

160. See the quotation above from Fuhrmann, *Der Sinn im Gegenstand*. The copy of this book I saw is from Mies' library, in the Department of Special Collections of the University Library, University of Illinois at Chicago.

161. That Westheim seems to have been connected with Mies around this time makes his reading of the excerpt even more likely. See Tegethoff, "From Obscurity to Maturity," 54. On the history of functionalist ideas in architecture, see de Zurko, *Origins of Functionalist Theory*.

162. For the view that Wagner's writings were important to Mies in the development of his functionalist thought, see Tegethoff, "From Obscurity to Maturity," 47.

163. As Pommer writes, Mies' views on technology, nature and civilization in the late 20s were "equally removed from the abstract aesthetics of van Doesburg, the mechanistic dreams of the Constructivists, the antitraditionalism of the avant-garde, and the sociopolitical interventionism of Gropius and May...." This unnamed, circumscribed position is what I would term "biocentric." Richard Pommer, "Mies van der Rohe and the Political Ideology of the Modern Movement in Architecture," in Schultze, ed., *Mies van der Rohe*, 112. As Pommer has noted, Mies was outside of traditional party lines. (p. 97) Mies' attempts to accommodate himself to the Nazi regime were typical -- as we have seen in Chapter Two -- of some Biocentrics. On the importance of Nietzsche to the young Mies, see Fritz Neumeyer, "Space for Reflection: Block versus Pavilion" in Schulze, ed., *Mies van der Rohe*, 151. On Mies' relations to the Catholic *Jugendbewegten* "Quickborn" group and its architect Romano Guardini, see note 91 of Pommer, 111. On the importance of Bergson, and of the concept of "life" for Mies, see Fritz Neumeyer, *The Artless Word. Mies van der Rohe on the Building Art* (Cambridge Mass.: The MIT Press, 1991), 366, note 47. C.f. an example of Mies' Neo-Vitalist rhetoric of 1928: "We must master the unchained forces and build them into a new order, an order, to be sure, that leaves life free play for its development." (Quoted in Pommer, 111). For an account of Mies' involvement with the "Streit um die Technik", see Pommer, 111, esp. note 92. On the importance of the word "organic" to Mies' pedagogical approach in America, see Kevin Harrington, "Order, Space, Proportion: Mies's Curriculum at IIT" in Rolf Achilles, et al., eds., *Mies van der Rohe: Architect as Educator* (exh. cat.) (Chicago: IIT, 1986), 56.

That Mies was committed to Francé's *Lebenslehre*, i.e. the practical application of his *Biozentrik*, is indicated by the fact that in his copy of Francé's *So musst du Leben!* (Dresden: Carl Reissner, 1930), Mies marked the following passage: "Oft befragt nach dem praktischen Programm, das aus unseren Einsichten folgert, nach dem: Was soll ich also tun, nachdem ich eingesehen habe, dass die Lebenslehre recht hat? habe ich in dieser Schrift 'Phoebius...' und dazu noch in einem anderen, nicht dickeren Bändchen: 'Richtiges Leben' ... eine endgültige Antwort auf diese Fragen gegeben..." (p. 170) Mies owned both books, as well as the others indicated here.

164. Harrington, "Order, Space, Proportion: Mies's Curriculum at IIT." Mies marked the following passage his copy of Francé's book *So musst du Leben!* (Dresden: Carl Reissner, 1930): "Die Art functioneller Inanspruchnahme ist die Ursache bestimmter Gestaltungen, welche diese Funktion am besten befriedigen.... Die Erneuerung des Knochens geschieht also in der

zweckmässigsten Weise: nicht die Form wird wieder hergestellt, sondern die bestmögliche Funktion!" (pp. 36-7)

165. See Pommer, "Mies van der Rohe and the Political Ideology of the Modern Movement in Architecture," 104. Häring worked in Mies' studio in 1923-24, before he was able to rent his own. Häring remembers the Ring forming precisely during the time he shared Mies' studio, "Immer bei Mies." Häring remembers the Ring as including himself, Mies, Bruno and Max Taut, Mendelsohn, Hilbersheimer, Poelzig, Otto Bartning and Curt Behrend. See Joedicke, ed., *Häring*, 10. For Häring's views on form and function in 1925, see his "Approaches to Form," in Benton, Benton and Sharp, eds., *Form and Function*, 103-105.

166. El Lissitzky and Kurt Schwitters, "Nasci," *Merz* no. 8-9 (April-July 1924). On "Nasci" see Nisbet, *El Lissitzky*, 28-30; Eldersfeld, *Kurt Schwitters*, pp. 133-40 and Kai-Uwe Hemken, *El Lissitzky: Revolution und Avantgarde* (Cologne: Dumont, 1990), 89-93.

167. Nisbet has recognized the drawing as deriving from France, though he did not notice that it was a drawing apparently based on a photograph in France's book. (Nisbet, *El Lissitzky*, 30; 50, note 61) The bone image appeared both in *Bios: Die Gesetze der Welt* (Munich: Franz Hanfstaengl, 1921), plate 16 and in *Die technischen Leistungen der Pflanzen* (Leipzig: Voigt, 1919), 209. Tegethoff points out the organic nature of Mies' floorplans for the Friedrichstrasse tower proposal of 1922 in "From Obscurity to Maturity," 39, 42.

168. Lissitzky first refers to France in his letters of early 1924, but he must have been reading the scientists' works in 1923, when he and Schwitters first began work on "Nasci." See Lissitzky's letter of 10 March 1924 to Sophie Küppers, in Küppers-Lissitzky, *El Lissitzky*, 46. Indeed, signs of this interest in France are -- with its references to the "organic energy of the human body" and the screw and the propeller as the proper forms of the time -- first discernable in Lissitzky's piece "Rad -- Propeller und das Folgend," published in the second, September 1923 issue of *G*. For an English translation, see Lissitzky-Küppers, *El Lissitzky*, 349.

169. According to Kai-Uwe Hemken, this was a five-month-long cooperative effort, with Lissitzky providing the basic idea and the texts, and Schwitters arranging for the images and the actual editing process. Hemken, *El Lissitzky*, 89. Schwitters held the Romantic, organicist view of nature as a unified entity ever since a hiking trip to the Böhmisches Schweiz in 1910, on which occasion he had an epiphanic experience in this regard. He writes of it in "Kurt Schwitters Herkunft, Werden und Entfaltung," *L 5* (1921): 83. This is discussed by Dorothea Dietrich in *The Collages of Kurt Schwitters*.

ters: *Tradition and Innovation* (Princeton, N.J.: Princeton University Press, 1993): 67-9 and Beatrix Nobis "Mit Fundstücke aus der Natur" and "Symbole der Natur," in Joachim Büchner, ed., *Kurt Schwitters 1887-1948* (exh. cat.) (Frankfurt/Main and Berlin: Propyläen, 1986), 192, 200. John Elderfield has referred to Schwitters' tendencies at this time as "a constructive vision of nature." See: Elderfield, *Kurt Schwitters*, 133. On Schwitters' organicism, his Bergsonian notion of time as a transformative force, see also Dietrich, *The Collages of Kurt Schwitters*, 67, 110. Note the essentially Monist nature of Schwitters' treatment of any and all materials, "man-made" or "organic" in his oeuvre. Note also the organic nature of the *Merzbauen* and other related works. As Elderfield writes "it was in the building of the *Merzbau* that the "Nasci" idea of primordial elements achieved its most extraordinary realization." (*Kurt Schwitters*, 141)

170. Nisbet, *El Lissitzky*, 28. On Lissitzky's organicism, see also Railing, "'The Machine is no More Than a Brush'" and Manuel Corrada, "Mechanical and Organic Form in the Theory and Art of El Lissitzky" *The Structurist* 35-36 (1995-96): 57-63. As late as 1929 El Lissitzky dared write a text displaying his biocentric world-view, even within a Marxist context. In it he made it clear that even the "social-economic" "substructure" of the "ideological superstructure" is based in "life" and "organic growth": "everything which originates is a part of the social vital process." El Lissitzky, "Ideological Superstructure" (1929) from: *Neues Bauen in der Welt: I Russland* (Vienna 1930). English translation: Lissitzky-Küppers, *El Lissitzky*, 376.

171. Lissitzky, "Nasci." Compare Itten's statement "Everything vital reveals itself to man through movement. Everything vital reveals itself in forms. Thus all form is movement and all movement is manifest in form. Forms are receptacles of movement and movements the essence of form." Quoted in Marcel Franciscono, *Walter Gropius and the Creation of the Bauhaus in Weimar: The Ideals and Artistic Theories of its Founding Years* (Urbana Ill.,: University of Illinois Press, 1971), 191-2. See a version of this text reprinted in Hans Wingler, ed., *The Bauhaus: Weimar, Dessau, Berlin, Chicago*. Wolfgang Jabs and Basil Gilbert, transl. (Cambridge Mass.: MIT Press, 1968), 49-50, originally published in the "Utopia-Mappe" of 1921.

172. Nisbet, *El Lissitzky*, 30.

173. Elderfield, *Kurt Schwitters*, 137.

174. Lazar el Lissitzky, "Rad -- Propeller und das Folgende. Unsere Gestaltung ist eine Funktion Unseres Bewegungssystems," G no. 2 (September 1923): 2; reprinted in ABC Series 2, no. 1 (1926): 3-4.

175. Lissitzky, "Nasci," 84; and "K. und Pangeometrie," 110.

176. *Wendingen* 4, no. 11 (November 1921). Circumstantial evidence indicates that this issue actually appeared in the late summer or early autumn of 1922, however. See Nisbet, *El Lissitzky*, 185. I have looked through the complete run of *Wendingen* in the Special Collection of Robarts Library, University of Toronto.

177. In 1926 Hugo Häring, the principle figure of German organicist architecture at the time, invited Lissitzky and Sophie Küppers to see his "Gut Gurkau" farm project, which had been published in *G* and was considered to be one of paradigmatic examples of interwar German organic architecture. "Lissitzky was very enthusiastic," reports Küppers. Lissitzky-Küppers, *El Lissitzky*, 82.

178. Claude Lichtenstein, "ABC and Switzerland: Industrialism as a Social and Aesthetic Utopia" in: Werner Möller, ed., *ABC Beiträge zum Bauen. Reprint und Kommentar* (Baden: Lars Müller, 1993), 21. On ABC being modeled on *G*, see Jörg Stürzebecher, "ABC Between Review and Trade Journal Vanguard, Contemporaries (1924-1928), Followers" (sic) in: Werner Möller, ed., *ABC Beiträge zum Bauen*, 39, 41. On Lissitzky's inspiration for the production of ABC, see Hans Schmidt, "Memories of L. Lissitzky," in Lissitzky-Küppers, *El Lissitzky*, 397-8. On Meyer and Roth see Hans-Jakob Witter, "Überlegungen zur Peterschule in Basel," in Werner Kleinerüschkamp and Werner Möller, eds., *Hannes Meyer 1889-1954: Architekt Urbanist Lehrer* (Berlin: Ernst und Sohn, 1989), 54.

179. *El Lissitzky*, "Element und Erfindung," ABC no. 1 ([summer] 1924): 3-4. The emphases are mine. On the time of the article's writing, see Lissitzky's letter of 2 March 1924 in: Lissitzky-Küppers, *El Lissitzky*, 40. As we have seen, the third issue of ABC contained Lissitzky's article on Russian architecture which was one of the few to recognize the organicist intentions of Tatlin in his "Monument to the Third International."

180. Alfred Roth, "Gestalten-Form" and Roland Holst, "Die neue Welt," ABC no. 2 (1924): 3-4.

181. Mart Stam, "Modernes Bauen 2" and "Modernes Bauen 3," ABC no. 3-4 (1925): 3. "Modernes Bauen 1" appeared in ABC no. 2 (1924): 4. *El Lissitzky* recognized the Francéan nature of Stam's article in a letter to Sophie Küppers of 4 November 1924 in which he writes "The 'Nasci idea' is bearing fruit: (shape, form). Stam is coming this week or next, wants to discuss the new ABC series." (Küppers-Lissitzky, *El Lissitzky*, 54) On Stam's friendship with Lissitzky, see p. 81 and elsewhere in Lissitzky-Küppers, *El Lissitzky*.

182. El Lissitzky, "Aus einem Briefe," ABC, 2. Series no. 2 (1926): 3.

183. Hubert Hoffmann, "Hannes Meyer -- ökologische Aspekte seiner Lehre und deren Auswirkung" in *Hannes Meyer. Beiträge zum 100. Geburtstag* (Schriften der Hochschule für Architektur und Bauwesen Weimar, Heft 86, 1989), 99.

184. Stefan Kraus, "bauen ist ein biologischer vorgang -- Hannes Meyer," in Herzogenrath and Kraus, eds., *Bauhaus-Utopien*, 279-84. See also Steadman, *The Evolution of Designs*, esp. pp. 217ff.

185. K. Michael Hayes, *Modernism and the Posthumanist Subject: The Architecture of Hannes Meyer and Ludwig Hilberseimer* (Cambridge Mass.: MIT Press, 1995), 90-1. Hays manages somehow to avoid Meyer's biologism in this book. This is curious given that biologicistic biocentrism's anti-anthropocentrism would have accorded with his thesis of Meyer and Hilberseimer as "posthumanist."

186. Klaus-Jurgen Winkler, *Der Architekt Hannes Meyer. Anschauungen und Werk* (Berlin: VEB Verlag für Bauwesen, 1989), "Studienaufhalt in England", 22-4.

187. Hubert Hoffmann, "Hannes Meyer -- ökologische Aspekte seiner Lehre und deren Auswirkung," 99-100. Meyer's statement in "Die neue Welt" that "The city is the most complex biological agglomeration, and it must be consciously regulated and constructively shaped by man" probably derives from Geddes' organic view of the city, which in turn emerges from Herbert Spencer's view of society as an organism. Hannes Meyer, "Die neue Welt," *Das Werk*, 13, no. 7 (1926), 205-24. On Geddes as a Kropotkinian Anarchist, see Volker M. Welter, "The Geddes Vision of the Region as City: Palestine as a 'Polis'" in Jeannine Fiedler, ed., *Social Utopias of the Twenties: Bauhaus, Kibbutz and the Dream of the New Man*. Dessau: Bauhaus Dessau Foundation/Friedrich Ebert Foundation; Tel Aviv: Müller + Busmann, 1995: 72-9. On Geddes, see also Anna Bramwell, *Ecology in the 20th Century: A History* (New Haven: Yale University Press, 1989), 77-80. Hugo Häring shared this organic conception of the city as a quasi-living entity. See his "Zwei Städte," *Die Form* (1926) in: Joedicke, ed., *Hugo Häring*, 19. Häring's specific discussion of the city might also owe something to Francé's book *München. Die Lebensgesetze einer Stadt* (Munich: H. Bruckmann, 1920).

188. See Hannes Meyer, "Die Siedlung Freidorf," *Das Werk* 12, no. 2 (1925), 40-51, and Michael Koch, "Vom Siedlungsbau zum Lebensbau: Hannes Meyers städtebauliche Arbeiten im Kontext der Diskussion in den zwanziger Jahren." In: Kleinerüschkamp and Möller, eds., *Hannes Meyer 1889-1954*, 34-58.

189. Although not using the term "International Constructivist," Wolfgang Kersten describes essentially just this, in his "Hannes Meyer und die Kunst der Moderne," in Kleinerüschkamp and Möller, eds. *Hannes Meyer 1889-1954*, 128-30. See also, Martin Kieren, *Hannes Meyer. Dokumente zur Frühzeit. Architektur- und Gestaltungsversuche 1919-1927* (Heiden, Switzerland: Verlag Arthur Niggli, 1990), 104-8; and Klaus-Jürgen Winkler, "Kunst und Wissenschaft. Hannes Meyers programmatische Schrift 'die neue Welt' und die Wettbewerbsentwürfe 'Peterschule' und 'Völkerbundpalast,'" in Kleinerüschkamp and Möller eds., *Hannes Meyer 1889-1954*, 94-108.

190. All quotations here are from the English translation of "Die neue Welt" in Claude Schnaidt, *Hannes Meyer. Buildings, Projects and Writings* (Teufen, Switzerland: Arthur Niggli, 1965), 91ff. See also the translation in Benton, Benton, and Sharp, eds., *Form and Function*, 106-109.

191. Meyer was criticized for his biological determinism by Otto Geisted in his "Modernismus -- Kritizismus," *Kritisk Revy* (Denmark, 1928, no. 1, 14-24). There was also a reprint of "Die neue Welt" in this issue. (22-5) Geisted: "Selbstverständlich ist das Bauen, wie das menschliche Geistesleben überhaupt, ein biologischer Prozess. Allein es ist der Vorzug des Menschen vor anderen Lebewesen, dass er in weit höherem Grade imstande ist sich Ziele vorzusetzen. Sie wollen das Bauen auf den blossen Ausdruck einer Reihe von biologischen Bedingungen beschränken -- und haben sich es nicht klargemacht, dass die Geschichte der Menschheit kein blinder biologischer Prozess, sondern zweckbestimmt, vom Willen regiert ist."

192. Meyer, "Die neue Welt." Entomology recurs in his article "bauen" (*bauhaus* 1928, 4, 12-13; in English translation in Schnaidt, *Hannes Meyer*, 95-97): "we examine the ways in which human beings and animals are related to the garden, and the reciprocal effects that human beings, pets and domestic insects have on one another." (p. 97) On the importance of gardens and nature in Meyer's thought see also "der garten als erweiterung des wohnraums," reproduced in Kraus, "bauen ist ein biologischer vorgang -- Hannes Meyer," 282

193. Moholy-Nagy, *Vom Material zu Architektur*, 60, 148-49, 192. In his Foreword, Moholy only indicates that the book is based on his "grundlehre" at the Bauhaus between 1923 and 1928. (p. 6)

194. Gropius, "Bauhaus-Dessau -- Principles of Bauhaus Production" (1926) in Benton, Benton and Sharp, eds., *Form and Function*, 148.

195. Moholy-Nagy, *Von Material zu Architektur*, 196.

196. Biographical information on Ebeling is from Wulf Herzogenrath, "Gegenbilder -- wie sieht der Bau der Zukunft aus?" in *Bauhaus-Utopien*, 267-72, and 329-30.
197. Gropius, "systematische vorarbeit für rationellen wohnungsbau," *bauhaus* no. 2 (24 April 1927), 1-2. Ebeling, *Der Raum als Membran*, 31.
198. On the biocentric bases of the modern dance movement, see Janice Schall, "Rhythm and Art in Germany, 1900-1930" (Ph.D. dissertation, University of Texas at Austin, 1989). On Hausmann as a dancer, see the interviews Bartomeu Mari and Andréi B. Nakov conducted with Vera Broido-Cohn, in: Eva Züchner, ed., *Der Deutsche Spiesser argert sich: Raoul Hausmann 1886-1971* (Stuttgart: Hatje, 1994), 104, 110-11.
199. Ebeling, *Der Raum als Membran*, 18.
200. Herzogenrath, "Gegenbilder," *Bauhaus-Utopien*, 270. On Grunow, see p. 334.
201. Quoted in *Ibid.*, 277, note 14.
202. Ebeling, *Der Raum als Membran*. The book was influential on the *Bauhäusler*. See Neumeyer, *The Artless Word*, 170ff; and *Bauhaus Utopien*, 271ff. It was owned by both Moholy-Nagy (Hattula Moholy-Nagy Archive, Ann Arbor) and Mies van der Rohe (Mies van der Rohe library in the Special Collections Department of the University of Illinois, Chicago).
203. "Ein Stilwandel in der Architektur was bisher immer noch dadurch bedingt, dass ein neuer Lebensrhythmus durch die schaffende Hand von genialen Konstrukteuren in neuen Konstruktionen auszudrücken suchte. So wuchs eine neue Dingwelt aus einem Inneren organisch heraus." Ebeling, *Der Raum als Membran*, 30-31.
204. *Ibid.*, 30 and Herzogenrath, "Gegenbilder," in *Bauhaus-Utopien*, 272.
205. Christoph Asendorf, "Walter Benjamin and the Utopia of the 'New Architecture,'" in: Fiedler, ed., *Social Utopias of the Twenties*, 25.
206. Ebeling, *Der raum als Membran*, 21. On the "Wendung zur biologischen Architektur," see p. 19-20.
207. Moholy-Nagy, *Von Material zu Architektur*, 222; *The New Vision* (New York: W.W.Norton & Co., 1938), 198.
208. On this, see above. Also: László Moholy-Nagy, *The New Vision*, 60, 122.

209. For Moholy's references to Francé's *Bios: Die Gestetz der Welt* and its ideas, see Haus, *Moholy-Nagy: Photographs and Photograms*, 41, endnote 25. On Moholy and Francé, see also Irene-Charlotte Lusk, *Montagen ins Blaue: Laszlo Moholy-Nagy. Fotomontagen und -collagen 1922-1943* (Berlin: Anabas, 1980), 41-2. In America Moholy wrote that "R. Francé's bio-technique, which we shall teach in the New Bauhaus, is an attempt at a new science which shows how natural forms and designs can be translated without great difficulty into human production. This means that nature's ingenious forms can be reduced to technical ones." Moholy-Nagy, "The New Bauhaus and Space Relationships," *American Architect and Architecture* (December 1937): 23. Moholy-Nagy, *Vision in Motion* (Chicago: Paul Theobald, 1947), 44-5, 241, 269.

210. Eleanor Hight mentions that "Only the so-called 'Philebean solids' .. straight edges, and circular forms were allowed [in Moholy's *Vorkurs*]" and "The compositions of geometric forms used for objects designed in the workshop echo in three dimensions the forms found in Moholy's painting and prints at the time." Though she does not provide a specific reference for the statement concerning "Philebean solids," these seem to be Francé's *Grundformen*, and Hight implies that this requirement was continuous throughout Moholy's tenure as *Vorkurs* instructor. See Eleanor M. Hight, *Picturing Modernism: Moholy-Nagy and Photography in Weimar Germany* (Cambridge Mass.: The MIT Press, 1995), 37-8.

211. László Moholy-Nagy, "Das Bauhaus in Dessau," *Qualität* 4, no. 5-6 (May-June 1925): 85.

212. Hans M. Wingler, in his Editor's Note to the reissue of the 1927 edition Moholy-Nagy's *Malerei, Fotografie, Film* (Mainz and Berlin: Florian Kupferberg, 1967), 141.

213. The fact that Moholy-Nagy refers to Francé as a "Hungarian biologist" in his last book, *Vision in Motion*, indicates a certain degree of familiarity with the biologist, as it was not generally known in Germany that Francé grew up in Hungary. (p. 241) On Francé's complex ethnicity, see Chapter Two.

214. I will refer here to the English translation of the second edition, *Malerei, Fotografie, Film* (Munich: Albert Langen, 1927). For the differences between the two editions, see Hight, *Picturing Modernism*, 177-87.

215. See Harry Robin, *The Scientific Image: From Cave to Computer* (Abrams: New York, 1992), 126-27.

216. Moholy-Nagy, "Fotografie ist Lichtgestaltung" [Photography is manipulation of light] *bauhaus*, no. 1 (1928): 2ff. In: Haus, *Moholy-Nagy: Photographs and Photograms*, 48.

217. Molly Nesbit, "Photography, Art and Modernity (1910-1930)," in: Jean-Claude Lemagny and André Rouillé, eds., *A History of Photography: Social and Cultural Perspectives* (Cambridge: Cambridge University Press, 1987), 116.

218. Hight, *Picturing Modernism*, 185-6. See also page 200 for a formalist view of Moholy's New Vision. Compare, however, Chapter One, in which she describes Moholy's project as more than merely formalist, as one involved "with the most progressive scientific, architectural, and social theory" of the time. (p. 3) On page 10, Hight declares, furthermore, the very thesis of her book as a refutation of the view that Moholy's New Vision was merely formalist. (p. 10) In the end, while Hight is on the right track, without an awareness of the biocentric background to New Vision, it is difficult to counter the attacks of "pure formalism" levelled against it.

219. Moholy-Nagy, *Painting, Photography, Film*. Janet Seligman, trans. (Cambridge Mass.: The MIT Press, 1967), 8.

220. *Ibid.*, 13.

221. Haus, *Moholy-Nagy: Photographs and Photograms*, 28.

222. Hausmann, "Wir sind nicht die Photographen." By the late 20s Hausmann had, in effect, recanted, and he was producing photographs himself. The full effect of Hausmann's thought on the development of Moholy-Nagy's theory of vision and photography is yet to be determined. Moholy-Nagy acknowledged his debt to Hausmann in a letter of 28 November 1936 from London, in which Moholy writes that his work of the early twenties is not given its fair due in the histories of the period. (A copy of the letter is in the possession of Hattula Moholy-Nagy, Ann Arbor, Michigan.) Hausmann's companion from 1928 to 1934, Vera Broido-Cohn remembers Moholy-Nagy saying to her in London around this time that "Wir alle waren von [Hausmann] beeinflusst; er war der erste." Marí's interview with Broido, 103.

223. See Lusk, *Montagen ins Blaue*, 51. Lusk does not conceptualize Moholy's biologism, however.

224. On this, see Michael Kröger, "'...gleichsam biologische Urzeichen...'" Die Erfindung biomorpher Natur in Malerei und Fotografie der dreissiger Jahre," *Kritische Berichte* 18, no. 4 (1990): 74.

225. Francé, *Die Welt als Erleben: Grundriss einer objektiven Philosophie* (Dresden: Alwin Huhle, 1923), 53. See also *Das Buch des Lebens: Ein Weltbild der Gegenwart* (Berlin: Ullstein, 1924), esp. 25.

226. Moholy-Nagy, *Painting, Photography, Film*, 16-17. In a footnote, Moholy specifically refers to children's art as an instance of such a "pure" art.

227. Lusk, *Montagen ins Blaue*, 51.

228. Ibid.

229. Martin Schäfer's planned book on "constructive biology" was first mentioned by Moholy in a letter to Rodchenko of 18 December 1923 (Krisztina Passuth, *Moholy-Nagy* {London: Thames and Hudson, 1985}, 393) and again in his letter to van Doesburg of 26.8.24 in which he writes "wir bringen vorläufig nur ein solches Buch, eine 'konstruktive Biologie' heraus." (Appendix, van Doesburg, *Grondbegrippen van de nieuwe beeldende kunst*, 109), and it was still present in the *Bauhausbücher* prospectus of 1927, before Moholy's departure from the Bauhaus. (Wingler, ed., *Bauhaus*, 131) My search so far has uncovered nothing on Schäfer.

230. Ibid., 17.

231. As late as 15 July 1929, the date of the appearance of *bauhaus* 3, no. 3, Moholy's book was advertised as "von kunst zu leben." (Inside cover) In *bauhaus* 3, no. 4 (October-December 1929), which appeared in October, Moholy's book was announced as appearing "in kürze" and was entitled for the first time as "von material zu architektur." (inside cover)

232. Brian O'Doherty, Preface to Lewis R. Wolberg, *Micro-Art: Images in a Hidden World* (New York: Abrams, 1978): xiv.

233. Raoul Francé's position vis-a-vis the arts, like so many aspects of his oeuvre, is contradictory and complicated, and will be dealt with elsewhere. While in contact with figures such as René Schickele and Emmy Hennings, not surprisingly, Annie Francé-Harrar's closest relationship was with the "New Age" vitalmystisch Nudist activist artist Fidus. On Francé-Harrar's career as an art critic and Munich Bohemian-set figure, see Francé-Harrar, *Mein fin de siècle*, 44-46, 69-74, 198-202.

234. Francé was producing and publishing graphic illustrations to his texts of superior graphic ability, especially as concerns his tonal range. Indeed he had invented the technique of *Federstich* as a replacement for the copper etching for this purpose. (Francé-Harrar, *Mein fin de siècle*, 204.) That he considered himself to be an artist is indicated by the publication in 1925 of Rudolf Engel-Hardt's book *Francé als Graphiker. Ein Weg zum 'Wirklichen Naturbild'* (Stuttgart: Walter Seifert, 1925). As this is an involved topic, not directly relevant to this discussion, it will be dealt with elsewhere.

235. I have discussed this question in public lectures given at Queen's University in 1995 and at the Universities Art Association Conference at the University of Guelph in 1996. I will treat it in an upcoming article.

236. On Renger-Patzsch's understanding of his own work in *Die Welt ist schön* (Munich: Kurt Wolff, 1928) and after in terms of a (in effect, Francéan and biocentric) biotechnical analogy between nature and technology, see Ingeborg Güssow, "Die neusachliche Photographie," in Güssow, *Kunst und Technik in den 20er Jahren*, 98-103. Renger-Patzsch maintained contact with biocentric thinkers of the both the Left and Right; thus Hermann Hesse and Ernst Jünger. See Donald Kuspit, "Albert Renger-Patzsch: A Critical-Biographical Profile" in: Renger-Patzsch, *Joy Before the Object* (San Francisco: Aperture/Los Angeles: J. Paul Getty Museum, 1993), 6-7. Note the Monist subtext of *Die Welt ist schön*, i.e. in the sequencing and grouping of the photographs: there is beauty to be found in all of nature, both artifactual and natural. On the importance of Ernst Fuhrmann to Renger-Patzsch's development, see also Ann and Jürgen Wilde, *Albert Renger-Patzsch: Ruhrgebiet Landschaften* (Cologne: DuMont, 1982), 170. On Fuhrmann and his association with Lucia Schulz and Heinrich Vogeler, see Chapter Three. For contemporary biocentric understandings of his work, see Carl-Georg Heise's introduction to *Die Welt ist schön*, Ernő Kállai's review of it in *Bauhaus 3*, no. 2 (April-June 1929: 97), and especially Walter Rietzler's review in *Die Form 4*, no. 1 (January 1929): 24.

237. For evidence of a contemporary naturamorphic analogical understanding of the book, see "Waggerl," Review of *Malerei, Photographie, Film, Photographische Korrespondenz 62*, no. 2 (30 June 1926): 108-09.

238. Francé, *Bios: Die Gesetze der Welt*, vol. II, 68-9.

239. Moholy-Nagy, *Vom Material zu Architektur*, 148ff. Francé, *Die Pflanze als Erfinder*, 18.

240. Beaumont Newhall, *Photography: A Short Critical History* (New York: MOMA, 1938), 86. Newhall states Moholy's influence on him in this regard in Newhall, *The History of Photography from 1839 to the Present Day* (New York: MOMA, 1949), 215. On their friendship, see Chapter Five.

241. See the Introduction on the topos of self-similarity.

242. Moholy-Nagy, *Painting, Photography, Film*, 68-69.

243. *Ibid.*, 86-7.

244. See Ernst Fuhrmann: *Stacheln* (Darmstadt: Auriga Verlag, 1924); *Die Welt der Pflanze. Band I: Orchideen* (Berlin: Auriga-Verlag, 1924); *Die Welt der Pflanze. Band I: Crassula* (Berlin: Auriga-Verlag, 1924); *Die Pflanze als Lebewesen. Eine Biographie in 200 Aufnahmen* (Frankfurt/Main: Societäs-Verlag, 1930); *Das Wunder der Pflanze* (Berlin: Büchergilde Gutenberg, 1935).

245. Moholy-Nagy, *Painting, Photography, Film*, 52-3.

246. Hausmann, Moholy, Arp and Puni, "Manifesto of Elemental Art."

247. Moholy-Nagy, *Painting, Photography, Film*, 33-37. The earliest reference to X-ray photos in Moholy's writings is in his cooperative effort with Lucia Schulz, "Produktion-Reproduktion," *De Stijl* 5, no. 7 (July 1922): 98-100. I will deal with the topic of art micrography in detail elsewhere.

248. Newhall, *The History of Photography from 1839 to the Present Day* (1949), 215.

249. Moholy-Nagy, footnote on page 156 of *The New Vision* (1938). Moholy-Nagy's original reference to the planned article appeared in a footnote to his untitled text in *i10* 1, no. 6 (June 1927): 234. I am assuming that Moholy, who was photography editor of *i10*, and who knew Jacoby's work, commissioned the article from Jacoby.

250. Moholy-Nagy, "Ismus oder Kunst?," 7.

251. Moholy-Nagy, *The New Vision* (1938), 163. See Veit Loers, "Moholy-Nagy und die vierte Dimension," in: Gottfried Jäger and Gudrun Wessing, eds., *Über Moholy-Nagy* (Bielefeld: Kerber, 1997), 159. Loers suggests that Moholy-Nagy and Raoul Francé met, but he does not give his source on this (indeed, for some reason, there are no foot or endnotes in Loers' article). Since beginning my research on Moholy-Nagy's reception of Francé's thought in 1991, I have not yet come across such evidence.

252. Moholy-Nagy, *The New Vision* (1938), 181.

253. Moholy-Nagy, "Space-Time and the Photographer," *The American Annual of Photography* (1942): 11, in Kostelanetz, ed., *Moholy-Nagy*, 61. The origins of this text are to be found in *The New Vision* (1938), 181.

254. *Ibid.*, 64.

255. A project very similar to Francé's and highly reminiscent of Moholy's was undertaken by Lewis Mumford during the 1930s and 40s in his "The Renewal of Life" series of books. (1934-51). According to Robert Wojtowicz, this was "an exhaustive study of Western civilization that focused on technology, urbanism, and the human personality. 'Organic' renewal was the underlying theme of all four books. According to Mumford, if society was to achieve an organic balance, a blind faith in technology or planning was not enough. In his carefully crafted vision, technology would be harnessed for the common good, cities would be integrated carefully into their natural regions, and men and women everywhere would reach their fullest individual potential." Wojtowicz, *Lewis Mumford and American Modernism: Eutopian Theories for Architecture and Urban Planning* (Cambridge: Cambridge University Press, 1996), 3.

Note that the term "biotechnic" was coined by Mumford in 1934 on the model of Geddes' terms "geotechnic," "neotechnic" and "paleotechnic" rather than being borrowed from Francé. On this, see Steadman, *The Evolution of Designs*, 161ff, esp. 167. Starting in 1925, after he met Curt Behrendt of *Die Form*, "Mumford became widely known in Germany as a leading American architecture critic... During the next five years, Mumford contributed more than a dozen essays on architecture and design to *Die Form*, *Innendekoration*, and other German-language periodicals." (Wojtowicz, *Lewis Mumford*, 85) Parallels between Buckminster Fuller's and Moholy's projects deserve closer scrutiny. The possible connections between Mumford, Francé, Moholy-Nagy and Fuller requires investigation.

256. On Klages, Francé and Kropp, see Rietzler, "Einheit der Welt," 247-8. Hartlaub mentions neither Kropp nor Francé by name, but the references are clear. See: Ernst Kropp, *Wandlung der Form im 20. Jahrhundert* (Berlin: Hermann Reckendorf, 1926). Introduction by Walter Rietzler, wherein he states that Kropp had begun working on this book in 1921. Kropp's Klagesian and Heckelian text is thoroughly biocentric. On this fashion in general see Gert Mattenklott, "Karl Blossfeldt: Fotographischer Naturalismus um 1900," in Karl Blossfeldt, *Urformen der Kunst / Wundergarten der Natur: Das fotografische Werk in einem Band* (Munich: Schirmer/Mosel, 1994), 29-42; Kröger, "'...gleichsam biologische Urzeichen...,'" 72-78; and Güssow in *Kunst und Technik in den 20er Jahren*, 94-107. See also Rietzler's "'Ewig' -- 'Zeitlos'" in *Die Form* 6 (1931): 167-74, esp. the naturamorphic analogy illustrated on p. 173.

257. Nierendorf probably held an exhibition of the photographs in his Berlin gallery/bookstore in 1925. By 1926, the popular magazine *UHU* had published them in a spread highlighting the naturamorphic analogy. See: Robert Breuer, "Grüne Architektur," *UHU* 2, no. 9 (June 1926): 28-37. On this, see Mattenklott, "Fotographischer Naturalismus um 1900 und 1930," 31, and Kröger, "'...gleichsam biologische Urzeichen...,'" 75-7.

On the "Blossfeldt phenomenon," see also Chapter Five.

258. Rudolf von Delius, "Kunstform und Naturform," *Die Form* 1, no. 5 (February 1926): 109-10.

259. Hugo Häring, "Wege zur Form," *Die Form* 1, no. 1 (October 1925): 4.

260. Alfred H. Barr Jr., from the foreword to *Machine Art* (exh. cat.) (New York: MOMA, 1934), unpag.

261. Menno ter Braak, Review of Moholy-Nagy, *Malerei, Fotografie, Film*, 110 no. 13 (July 1928): 23. Carola Giedion-Welcker, "Zu Moholy-Nagy" [1930] in Giedion-Welcker, *Schriften, 1926-1971* Reinhold Hohl, ed. (Cologne: DuMont Schauberg, 1973), 143-4. See also her 1930 review of *Von Material zu Architektur*, 142-43.

262. Ernst Jäckh, "The New Era," *Die Form* 5 (1930): 302, 304. The list of thinkers in the full text: "Idee und Realisierung der internationalen Werkbund-Ausstellung 'Die neue Zeit' Köln 1932," *Die Form*, 4, no. 15 (August 1929): 408.

263. Ibid., 408. On the exhibition plans, see also Walter Rietzler, "1932," *Die Form* 4, no. 1 (1 January 1929): 1-3. The reference it to van de Velde's *Vom neuen Stil* (Leipzig: Insel-Verlag, 1907).

264. Herbert Read, "A Great Teacher" (*The Architectural Review* 1947), in Kostelanetz, ed., *Moholy-Nagy*, 203.

265. Alain Findeli, "L'esthétique pédagogique de László Moholy-Nagy et son rôle dans la transplantation du Bauhaus à Chicago." Typescript, p. 12. Published in German in an abridged version in *50 Jahre New Bauhaus* (Berlin: Bauhaus Archiv, 1987).

266. Lusk, *Montagen ins Blaue*, 51.

267. Rainer Wick, "Ästhetische Erziehung in gesellschafts-verändernder Absicht," "Bauhaus" issue of *ICSACahier* no. 6-7 (1987): 231. Gerhard Glüher also recognizes and discusses Moholy's biologism in his introduction to *László Moholy-Nagy: Frühe Photographien* (Berlin: Nishen, 1989), 104-05, as does Rolf Sachsse in: "Lucia Moholy," in: Rainer Wick, ed., *Das neue Sehen* (Munich: Klinckschardt & Bierman, 1991), 94.

268. Andreas Haus, "Sinnlichkeit und Industrie," in Stanislaus von Moos and Chris Smeenk, eds., *Avant-garde und Industrie* (Delft: Delft University Press, 1983), 113-114.

269. Haus, *Moholy-Nagy: Photographs and Photograms*, 39. C.f. Tanja Frank's more nuanced view of Ernő Kállai's move from International Constructivism to biocentrism in the late 20s as "ein Weg der Desillusionierung, an dessen Ende eine neue Illusion stand." Tanja Frank, Afterword to Ernst Kállai, *Vision und Formgesetz: Aufsätze über Kunst und Künstler von 1921 bis 1933*. Tanja Frank, ed. (Leipzig and Weimar: Gustav Kiepenheuer, 1986), 272. Despite this critique, I hold Haus' writings on Moholy to be the best ever published on the artist. For other accounts and examples of the contemporary post-New Left German critical stance towards interwar biocentric culture, see Mattenklott, "Fotografischer Naturalismus um 1900 und 1930," 40-42 and Christian Bromig, "Biomorphismus oder Anthropozentrismus? Einige kritische Anmerkungen zu Michael Krögers Aufsatz 'Die Erfindung biomorpher Natur in Malerei und Fotografie der dreissiger Jahre,'" *Kritische Berichte* 19, no. 2 (1994): 92-107.

270. László Moholy-Nagy in *The Little Review* (May 1929): 56. For a critique of biologism and functional determinism, see Steadmann, *The Evolution of Designs*, 224.

271. Walter Zimmermann, "Wissenschaft; Biologie," *Sozialistische Monatshefte* 28, no. 2 (February 1922): 122-23.

272. On Behne's "Kunst, Handwerk, Technik," *Die neue Rundschau* (1922): 1021-1037, see *Die Zwanziger Jahre des Deutschen Werkbunds*, 34-5.

273. Adolf Behne, *Das moderne Zweckbau*, 46-7.

274. Ibid., 52-3. Behne's source on *Zweckmässigkeit* must have been von Uexküll in *Bausteine zu einer biologischen Weltanschauung*, in which he discusses *Zweckmässigkeit* in nature on page 194.

275. Walter Rietzler, "Front 1932" *Die Form* 7, no. 1 (15 January 1932), 4.

276. Ernő Kállai, "Apja sváb, anja szerb, ő tehát magyar" [His father is Swabian {i.e. ethnic German in Hungary}, his mother is Serbian, therefore he is Hungarian], signed by "The Jew who came 'home' from Germany," 4. Typescript of the article in the Archives of the Hungarian National Gallery, Budapest, published as "Asszimiláció vagy disszimiláció" [Assimilation or dissimilation] *Korunk Szava* [Voice of our age] (1 February 1938). Reprinted in: Ernő Kállai, *Művészet veszélyes csillagzat alatt. Válogatott cikkek, tanulmányok* [Art under dangerous constellations. Selected articles, studies] Éva Forgács, ed., (Budapest: Corvina, 1981), 265-70. Kállai was in fact not Jewish, but he was anti-Nazi, and was labelled "Jewish" in an attack on him in the Hungarian Fascist press after his return

to Budapest in 1935.

277. See Westheim, "Rassebiologische asthetik" (1938) in Westheim, *Kunstkritik aus dem Exil* (Hanau/Main: Müller & Kiepenheuer, 1985), 13-33.

278. See also Mattenklott's discussion of the "Kritik von Links" of the Blossfeldt phenomenon in the journal *A bis Z*, in "Karl Blossfeldt: Fotografischer Naturalismus um 1900 und 1930," 40-42.

279. Francé, *Plasmatik*, 151 and 181 respectively. Francé sometimes spelled ecosystem as "Biozönose," and sometimes as "Biocönose."

280. See Francé, *Harmonie in der Natur* (Stuttgart: Kosmos, 1926).

281. Mies and others might even have read Francé's critique of Expressionist art as a reflection of the artists' desperate clinging to a mythical self, of a "Souveränen Willens-übersteigerung," a negation of the "true" goal of art, to represent the harmony in natural systems. (This no doubt reflects Ernst Mach's dictum that "das Ich ist unrettbar." Quoted in Pauline M. H. Mazumdar, *Species and Specificity: An Interpretation of the History of Immunology* {Cambridge: Cambridge University Press, 1995}, 170.) While perhaps dismayed by Francé's amateurish art criticism, Mies might have been gratified by Francé's praise for the design of Hermann Muthesius, and for the skyscraper as an "optimale Lösung der Raumfrage in der Weltstadt." See "Expressionismus als Fremddiee" in *Das Buch des Lebens*, 460-2 and 521-3. See Moholy's reference to Francé's views on the skyscraper in *Vision in Motion*, 45.

282. Charlotte Douglas, "Evolution and the Biological Metaphor in Modern Russian Art," *Art Journal* 44, no. 2 (Summer 1984): 153.

283. Elderfield, *Kurt Schwitters*, 140.

284. Nisbet, *El Lissitzky*, 30.

285. Andreas Haus, *Moholy-Nagy: Fotos und Fotogramme* (Munich: Schirmer/Mosel, 1978), 16.

286. Quoted in Hemken, *El Lissitzky*, 90.

CHAPTER FIVE

Moholy-Nagy's New Vision, Aestheticized Scientific Self-Imaging and Kállai's Bioromantic Epiphany

It is time [for photography] to return to its true duty, which is to be the servant of the sciences and the arts.... Let it ... adorn the naturalist's library, and enlarge microscopic animals; let it even provide information to corroborate the astronomer's hypotheses; in short, let it be the secretary and clerk of whoever needs an absolute factual exactitude in his profession -- up to that point nothing could be better.... But if it be allowed to encroach upon ... anything whose value depends solely upon the addition of something to man's soul, then it will be so much the worse for us! (Baudelaire 1859):

The remarkable expansion of our knowledge of nature, and the discovery of countless beautiful forms of life ... have awakened quite a new aesthetic sense in our generation, and thus given a new tone to painting and sculpture. Numerous scientific ... expeditions ... have brought to light an undreamed abundance of new organic forms. ... [A]mong ... the lower groups that had been neglected before there were thousands of forms of great beauty and interest, affording an entirely new inspiration for painting, sculpture, architecture and technical art. In this respect a new world was revealed by the great advance of microscopic research ... and especially by the discovery of the marvellous inhabitants of the deep sea ... the peculiar beauty and diversity of which far transcend all the creations of the human imagination. (Haeckel 1899)²

Urformen der Kunst -- true enough. But what are [Blossfeldt's photos] other than *Urformen* of Nature? Forms which were never mere models for art, but were from the start the *Urformen* at work for all creation. Even the coolest observer would be given pause by the way that the enlargement of plant parts at the macroscopic level ... displays forms as extraordinary as those at the microscopic level.... And if ... avant-garde painters such as Klee and ... Kandinsky, have long been concerned to familiarize us with realms which the microscope so brusquely and forcefully wished to abduct us to, these enlargements of plants contain, even moreso, vegetal *Stilformen*. (Benjamin on Blossfeldt 1928)³

Das Bewusstsein um die irrationalen Verstrickungen des ichs mit den Keimwesen und -Strukturen der Natur

fühlt sich rätselhaft angezogen durch den Anblick von Mikro- und Röntgenaufnahmen. Sie sind die Phantasie der Bioromantik so anregend, wie das Studium der Anatomie für die Aktmalerei. Denn auf keiner komplizierteren Entwicklungsstufe ist das Unfassbare der Schöpfung und ihrer lebendigen Leib-Seele-Einheit so deutlich, wie in primitiven Zellengebilden ... Es erregt die Phantasie des Künstlers ... Formen eines unübersehbaren Typenreichtums zu finden, Formen leuchtender Gesetzmässigkeit ... und spontaner, sinnvoll-rhythmischer Beweglichkeit. Es erschüttert ihn, wenn er in diesem kräftespiel urkeimhafter Organstrukturen die gleichen Grundspannungen und Rhythmen erlebt, die ihm von der Konzentration auf die Tiefen seines eigenen Wesens her vertraut sind. ... Die Schranken unseres Bewusstseins grenzen nirgends dichter und erschreckender an das Jenseits, als beim Anblick des Mikrokosmos. (Kállai 1932)⁴

The experience of the "hidden soul" in all things, seen either by the unaided eye or through microscopes or binoculars, is what I call the "internal eye." This eye penetrates the hard shell, the external "form," goes deep into the object and lets us feel with all our senses its internal "pulse." (Kandinsky 1935)⁵

Betrachtet man wissenschaftliche Fotos, Mikrofotos, Diagramme, so fällt eine gewisse Ähnlichkeit mit den Formungen innerhalb der neuzeitlichen Kunst auf.... Die selbständigen Formerfindungen der ... Kunst bilden dabei gleichsam die abgeklärten Endformen im Sinne absoluten Sehens. Die äusserliche Ähnlichkeit von Kunstwerken mit solchen Dingen, die Forschen und Wissen ins Sichtbare und Tastbare übersetzen, bleibt an der Oberfläche. Die tiefliegenden Beziehungen sind damit nicht aufgedeckt, nur angedeutet. (Baumeister 1943-44)⁶

Having achieved the scientific mastery of ... nature and its ordering into a one-sided technological dimension, man was searching for renewed contact with the pulsation of the dynamic forces of nature processes. He recognized that scientific technological progress needed to be reevaluated in biological dimensions.... The artist rediscovered nature. But he turned away from the naturalistic representation of the forms of the trees, flowers, and animals, and took as his new subject-matter the visible processes of the growth. (Kepes 1944)⁷

Wittingly, or through unconscious exposure, the non-objective artist draws much of his iconography from

the visual data of the scientist -- from magnifications ... telescopic vistas, submarine scenery and X-ray photographs. Not that he undertakes to render a particular bacterial culture.... But it is significant how often the morphology he finds analogous to his own sentient being is such as has revealed itself to human vision scientifically multiplied. It is apparently in these gestating images, shapes antecedent to the visible, that many abstract painters recognize an intenser mode of natural truth. [F]rom [these uncharted realms] they wrest new decorative principles -- such as the 'biomorphic' motif in modern ornament and applied design. Nature they imitate no less than did Masaccio. But where the Renaissance had turned to ... the finished forms of man and beast, the men of our time descend into nature's laboratories. (Steinberg 1953)⁸

...the fascinating beauty of form in photographs of crystal and organic microstructures was perceived only after painters had discovered the ordered world of extra-objective forms.... Even the scientists found their micro- and X-ray photographs merely useful at first; it did not occur to them that they might also be aesthetically beautiful. For this to happen, an entirely new sensibility of visual aesthetics was required: the sensibility of the artist. Science and technology acknowledge and create new facts; it is the artist's task to integrate these new facts into our visual picture of the world, our aesthetic scheme of values, and so to renew our sensibility and extend its horizons. (Schmidt 1960)⁹

The "new vision" is ... the revelation of what the unaided eye cannot see but which has ever existed; as more powerful tools for observation are built, more worlds of form are revealed. They seem new only because we have not seen them before: the forms themselves are basic, and not the product of man's imagination and invention. Scientific photographs taken throughout the past hundred years are basically similar; it is our acceptance of them as *esthetic* revelations which is new. If Bertsch's photomicrograph of a glow worm seems to us a challenging abstraction, it is because painters have taught us to appreciate new forms. Such a picture could hardly have been accepted by artists when it was presented in 1857 as a scientific investigation. (Newhall 1964)¹⁰

All so-called abstract pictures are based in some degree on nature or, more exactly, on the artist's

selection of certain phenomena of nature. (Woods 1936)¹¹

The use by painters of scientific images ... as things to be represented or copied, is a very minor component of ... modern art. However, to people whose habit of thought is visual rather than verbal ... diagrams may convey ... more ... than even the most lucid description.... It is likely that books such as those of Moholy-Nagy and Kepes were among the most important means of conveying to painters some inkling of the changes ... bringing about the development of Second [mechanist] Science into Third [systems] Science.... I ... concede that many modern artists have seen [scientific photographs] in ... popular journals or advertisements.... They may well have been struck by the visual qualities of such scientific images, and found them exciting raw material.... But the point ... is that ... artists of the 1890s made no use of such images because they saw no reason to believe that images of this kind could be meaningful. (Waddington 1969)¹²

Is it too obvious to suggest that artists, who are notoriously intelligent and searching, might, at the beginnings of Surrealism, have acquainted themselves with the results of a century of microscopic morphology? ... immersed in organicism, it seems unlikely that artists would not be aware of its forms. The popular science books of the late nineteenth century, when such artists were young, abounded in such illustrations. An examination of artists' journals and libraries from this point of view is indicated. (O'Doherty 1978)¹³

1. Introduction

These passages underline the normative, even metaphysical value scientific images, what Harry Robin has referred to as the products of scientific "self-imaging," have, and the link between such imagery and biomorphic Modernist style.¹⁴ As Didi Hubermann writes, "the first thing the camera did was extend the powers of the two great optical instruments ... the microscope and the telescope. The albums of scientific photographs displayed a whole world of forms ranging from the infinitely small to the infinitely large... The results were spectacu-

lar."¹⁵ Such imagery has repeatedly elicited the *kosmische Einheitsgefühl* in its viewers. As we saw in Chapter One, Brian O'Doherty has referred to the resulting literature as "the poetics of bourgeois wonder,"¹⁶ a poetics deriving from the Romantic tradition of admiration for the beauties of nature ultimately rooted in the "Kunst und Wunderkammer" phenomenon of Renaissance Europe. In its twentieth century guise, it derives directly from the turn of the century German practice of deriving aesthetic pleasure from the beauties of nature as expressed in their unfamiliar, often miniature or microscopic, undersea or astronomical manifestations. Participants in this trend -- including its founder Ernst Haeckel and his followers Moritz Meurer, Meurer's student Karl Blossfeldt, Martin Gerlach, Roland Anheisser and Heinrich Schenk -- produced during the late 19th and early 20th centuries beautiful images often assembled into what were effectively pattern books for the applied arts. These images were meant to instruct, according to the turn-of-the-century biocentric (Neo-Vitalist and Monist) aesthetics, to be models for artistic decoration which at once exemplified the morality of the "natural." As Gert Mattenklott, Michael Kröger and Andreas Hünneke have demonstrated, this wonder at the beauties of nature underwent a renaissance in the mid 1920s, a revival associated with the aestheticization of such images, and with their adoption as models for the fine arts.¹⁷ As we have seen in Chapter Four, one of the best-known examples of this revival is to be found in the work of Ernst Kropp.

Baudelaire's words demonstrate an early resistance on the part of critics to the incorporation of photography -- much less of scientific photographs -- into the discourse of high art, a resistance which in effect linked applied (including scientific) and "art" photography during the early decades. As Janet Buerger writes, "The nature of the relationship between photography and science was an issue of debate and consternation in the 1840s and 1850s; it was at the heart of the con-

troversy over whether photography was an art."¹⁸ Newhall's, and after him, Waddington's words indicate that a century later László Moholy-Nagy's "New Vision" had engendered the appreciation of microscopic, telescopic and x-ray photographs and films for their formal as well as practical value. Newhall's writing is one of the earliest indexes of this shift in aesthetics, and he and Waddington are to my knowledge the only critics to have commented explicitly on the connection between New Vision and the aestheticization of scientific photography. Newhall came to this insight through his friendship with Moholy-Nagy, which developed after Moholy's arrival in the United States in 1937. Thus, in the first and second, 1937 and 1938 editions of his photographic history written to accompany a survey exhibition of photography he curated for the Museum of Modern Art in New York, Newhall mentions only the "awe-inspiring beauty" of some astronomical photographs in his discussion of scientific photography.¹⁹ In the greatly expanded, 1949 edition of the book, after he had more fully integrated Moholy's ideas into his thought, Newhall extended the discussion of scientific photography. Immediately following a treatment of Moholy's New Vision, Newhall wrote:

Certain it is that scientists by means of photography have made visible the unseen, laid bare the structure of the microcosmos, and penetrated the worlds which lie beyond seeing. While the precise scientific significance of these factual photographs may escape us as laymen, our imagination is gripped by their strange and often provocative beauty.... The form of the microcosmos has been laid open to all, permanently and beautifully. Complex crystalline structures which defy description are precisely recorded, and we can enjoy the beauty of their forms.²⁰

Newhall's passage -- which is, as we shall see, reminiscent of Ernő Kállai's 1947 description of his epiphanic experience at the *Film und Foto* exhibition of 1929 -- demonstrates that he gave this idea its most cogent expression in the 1964 edition of the book.²¹ My own investigations extend Newhall's sugges-

tion and takes up O'Doherty's challenge: I propose that it was, more than any other single factor, Moholy's New Vision and the repeated appearance of the naturamorphic image analogy as *topos*, which led to the exhibition and publication of the products of scientific self-imaging in artistic (mainly art photographic) contexts. It was by means of this process that such imagery more easily available to artists after the mid 20s, and so it contributed to the rise of biomorphic Modernist art in the 30s.

The most common explanation for the visual parallels between biomorphic Modernism and scientific self-imaging is the "psychobiological" one related to the "primitivist" aesthetic: Since humans are part of nature, if we follow our intuition, that is our *Seele* rather than our *Geist*, we will arrive at forms and structures analogous to those in nature even without having necessarily seen such forms. From Kandinsky, El Lissitzky, Walter Benjamin and Kállai in the early days of the naturamorphic analogy *topos* during the teens and 20s, to the heyday of the scientific image analogy during the 1950s, this was the most common explanation. As Herbert Read articulated it, invoking the *topos* of self-similarity: "...the elementary forms which men have instinctively given to their works of art are the same as the elementary forms which exist in nature. What are these forms in nature? They are present in the vast interstellar spaces of the universe as well as in the most microscopic cells and molecules of matter."²²

As early as 1931 Kállai proposed an exhibition to be entitled "Kunst und Wirklichkeit" to the Leipzig Museum, a proposal which suggested the systematic juxtaposition of examples of scientific photography and Modernist art:

Zu [Hans] Arp und [Fritz] Kuhr und [Fritz] Winter im besonderen, aber auch zu sämtlichen Surrealisten überhaupt: es wären Vergrößerungen von biologischen Aufnahmen zu zeigen (auch Mikro-fotos), in denen die formalen Analogien zwischen Tier, Pflanze und Mensch deutlich werden....²³

While he was unable to realize this project at the time, he finally actualized a version of it in Budapest in his exhibition "Új Világkép" [New Image of the World], held at the Social Democratic Party's "Galéria a Négy Világtájhoz" [Gallery to the Earth's Four Quarters] in 1947, and in the booklet *A természet rejtett arca* [The hidden face of nature], published in conjunction with the exhibition.²⁴ Following this, a whole series of exhibitions and related publications by, among others, György Kepes, Richard Hamilton, Lancelot Law Whyte, Georg Schenk, Georg Schmidt, Adolf Portman, John H. Baur, Philip C. Ritterbush, and Jack Burnham invoked the scientific image analogy.²⁵ Of Schenck and Schmidt's Basle exhibition held in 1958, Adolf Portman wrote:

In recent years we have witnessed the momentous transition from the familiar world of visible forms into a more elemental world where forms are created by forces that are hidden from view. It would be interesting to unravel the tangle of circumstances which brought about this transition. Scientific discoveries undoubtedly had a part in it. But we must not oversimplify or exaggerate their effect. Certainly the world of the microscope gave an occasional stimulus; but the transition to abstract art was only rarely the result of familiarity with these newly discovered forms. The roots of the correspondences we find between paintings and photomicrographs go deeper.²⁶

By the 70s, O'Doherty was reacting to the ubiquity of this topos:

So much banal wonder and written nonsense have been provoked by the correspondences between images of art and science that it is an area where a babble of clichés holds sway. This may disguise the problem but does not remove it. There is an amusing form of interdisciplinary social climbing inherent in the comparison: science seeks an aesthetic cachet; art seeks from science the authority of which science deprived it.²⁷

The problem O'Doherty refers to, as we saw in the passage from him quoted on page four, is why this correspondence should exist. His proposal, the one I am taking up, is that artists saw the products of scientific self-imaging and were inspired

by them either formally, or conceptually, or both. In other words, an historically-based explanation of the scientific image analogy should be possible. As Bousquet, Ritterbush and Schmidt-Burkhardt have pointed out, and as even a cursory review of the secondary literature and of biomorphic Modernist artists' writings shows, artists such as Redon, Kubin, Arp, Klee, Kandinsky, Gabo, Kupka, Masson, Ernst, Miró, Moholy-Nagy, Moore, Tanguy and Zeisel either were looking through microscopes themselves, or were looking at scientific, particularly biological images such as microscopic photographs.²³ August Wiedmann is one of the critics to question the psychobiological explanation and its biological determinist implications:

The assertion made is that non-representational art holds up a mirror to nature's way of working as exemplified for instance in the structure of crystals, rocks, metals, minerals or other formations looked at under the microscope or through a telescope. The question why nature should want to "duplicate" itself in abstract art is seldom raised let alone conclusively answered. Are we to assume, moreover, that those non-representational paintings which do not correspond to any known microcosmic or macrocosmic formations are works of non-art? Ultimately the whole approach reduces art to *mimesis*, thus denying creativity.²⁹

Wiedmann's critique applies to all normative biologicistic systems: if everything we humans do is a part of nature, then nature as *exemplum* is superfluous and furthermore, the "unnatural" and all it implies, is impossible.

I do not wish to suggest that Moholy's integration of scientific photographs into exhibitions and journals of the 1920s as described in this chapter is the only way Modernist artists had access to scientific self-imaging. As O'Doherty has pointed out, with the advent of universal education in Europe and North America during the late 19th century, most of the artists working in the biomorphic Modernist mode would have encountered such pictures in their studies of biology and physics, if not also in popular science journals and the

popular press, which sometimes carried illustrated scientific articles. But while O'Doherty is correct in suggesting that most artists saw such images in their youth, it is not always the case that they would have looked at them in an aesthetic manner in those early days. Though a handful of 19th century artists such as Grandville, Redon and Munch, were using self-imaged scientific illustrations such as microscopic photographs and radiographs; indeed microscopes, as inspiration -- and there even was a fashion for such art inspired by Haeckel's *Kunstformen der Natur* early in the century -- it was still an exotic practice before the late 1920s. It was only after scientific photographs and films acquired the "aura" of art through Moholy's large-scale importation of them into the discourse of high art (and this was a curious reversal of the role Benjamin assigned to the potentially mass-produced image), that a wide circle of artists began to borrow their imagery and *Faktur*, resulting in the upsurge of biomorphism in artistic production of the 1930s noted by art historians.³⁰

Mainly because of this availability, Ernő Kállai was made aware of the scientific image analogy as a subject worthy of theorizing, though without crediting Moholy with the advent of this awareness, even though -- as a participant in the aesthetic economy which both generated and was affected by Moholy's writings -- Kállai already operated within the altered paradigm of visuality engendered by the *New Vision*.³¹

Nor do I wish to insist that exposure to such imagery was a necessary prerequisite to artists' production of biomorphic Modernist art. As well as being inspired by the products of scientific self-imaging, artists copied others' styles, or they arrived at "biomorphic" forms through formal experimentation and play -- a process which also invites psychobiological explanations of the resulting visual analogies.

We have seen in Chapter Two that interwar biocentrism is differentiable into, on the one hand, a biologicistic *Kulturpessimismus* (as in the case of Spengler and Klages' *Biozent-*

rik), and on the other, an optimistic biologicistic functionalism (as in the case of Francé's *Objektive* or *Biozentrische Erkenntnislehre* and von Uexküll's *Biologische Weltanschauung*). We have seen in Chapter Four, furthermore, that Moholy's Francéan biologicistic-functionalistic biocentrism shies away from a *vitalmystisch* regard for Nature, limiting itself to a fascination with a naturalized technology and its possibilities. *Vitalmystisch* feelings of unity with the cosmos -- typical of many biomorphic Modernist artists of the interwar period -- were, however, articulated by Ernő Kállai, who by the mid 20s, in his critical writings on the fine arts, had made the transition from a Constructivism which privileged technology over "nature" to Klages' and Prinzhorn's *Biozentrik*. In Chapter One I discussed how by the early 30s Kállai had designated the artistic manifestations of these aspects of biocentrism "*Bioromantik*." As Gábor Pataki, without a knowledge of the corresponding aspects of biocentrism or even of the category of biocentrism itself, perceptively writes, "In Kállais Deutung wird die 'Technoromantik' ein Teil, d.i. eine hell durchsonnte, optimistische Seite der Bioromantik."³²

Kállai's awakening to the psychobiological implications of the scientific image analogy -- a necessary prerequisite to his articulation of *Bioromantik*, the first coherent theory of biomorphic Modernism -- took place in Moholy's *Raum 1* of the *Film und Foto* ("FIFO") exhibition held in Stuttgart in 1929, by all accounts the most important of a sequence of Weimar German displays between 1925 and 1933 which combined art and applied photography. Hence it was as a resultant of the interaction of Modernist adherents of the two major varieties of interwar biocentrism, a cross-fertilization of *Bioromantik* and *Technoromantik*, that scientific self-imaging became more available to artists, and that such art was first theorized. This was a crucial symbiosis for the development and the coming-to-consciousness of biomorphic Modernism at the beginning of the 30s.

2. Scientific and Art Photography in Combined Public Display

I will now briefly trace the history of the combined exhibition of art and applied photographs in Germany. Also, I will demonstrate that Moholy's discursive and visual theorizing in the two editions of his book *Malerei, Photographie, Film* (1925 and 1927) affected the curatorial practices of photographic exhibitions and the editing of photographic journals, leading to the crucial integration of artistic and applied material within installations and publications.

The most important precedent in the case of the print media was the "Schelpennummer" of *Wendingen*, which, as discussed in Chapter Four, opened the eyes of key avant-garde artists and critics -- including Moholy-Nagy and Kállai, to the possibilities of scientific self-imaging. By 1927, *Das deutsche Lichtbild*, the German yearbook of *Neue Sachlichkeit* photography, conceived and produced by Hans Windisch under Moholy's influence, was also publishing applied and scientific photographs next to conventional art photographs. The addition of close-up nature photographs by the likes of Karl Blossfeldt, Ernst Fuhrmann, Albert Renger-Patzsch, Albert Léon and Oskar Prochnow, sometimes in conjunction with photographs by avant-garde practitioners such as Moholy-Nagy and the Bauhaus student Otto Umbehr (Umbo), was further evidence of the effect of Moholy's *Malerei, Photographie, Film*. Other photographic publications followed suit.

a. Heritage

Because photography was just as much a technical and scientific curiosity as it was a medium of artistic expression during the 19th century its early history is closely tied to the history of its scientific applications. Buerger discusses the close contacts between artists, art photographers and scientist-photographers in mid 19th century France.³³ It was in part due to this alliance, and to the aesthetic attention

accorded scientific photographs, that Baudelaire was reacting in the passage quoted at the start of this chapter.³⁴ While the intensive conjunction of photographic science and art at mid century faded with the consolidation of the photographic industry and of photographic practice, it is in keeping with this history that many of the great late 19th and early 20th century photographic exhibitions, such as those in Paris in 1867, 1900 and 1906, in Vienna in 1873, in Hamburg in 1893, in Berlin in 1896 and 1906, and in Dresden in 1909, featured both art photography and scientific photography.³⁵ According to Fritz Hansen, the most important of these was the "Internationale Photographische Ausstellung" held in Dresden in 1909.³⁶ Given this heritage in France and the German-speaking countries, and because Dresden was both a great art centre and a focus for Germany's photographic industry, it comes as no surprise that the scientific applications and technical products of the photographic industry were featured along with artistic achievements of amateur and professional photographers.³⁷ Thus at Dresden in 1909, the up-and-coming generation of art photographers, or those with art photographic ambitions such as Imogen Cunningham who saw this show,³⁸ were exposed to photographic prints which exemplified the broadest range of technical possibilities of the medium, possibilities which were being systematically excluded by the Pictorialists, the prevailing school of art photography at the time, although Hugo Erfurth, a forerunner of sharp-focus "neue Sachlichkeit" photography, assisted in making the selections for the artistic section of the show.³⁹ This integration of industrial products on the one hand, and of scientific, technical and aesthetically oriented photography on the other, set the tone for Weimar photographic exhibitions. It was as a concomitant of the pictorialists' success at having their work accepted as "art" that the disintegration of scientific and "art" photography was effected.

It is important to keep in mind that most of the exhibi-

tors at the turn-of-the-century German photographic exhibitions were "amateurs."⁴⁰ In Dresden in 1900 there was an entire exhibition devoted to scientific photography organized by the Dresdner Gesellschaft zur Förderung der Amateurphotographie, presumably at least partly with the intent of inspiring amateurs to engage in such work.⁴¹ This promotion of amateur scientific photography was rooted in the *Kunstschulbewegung* and the pedagogical reform movement in general of the early 20th century, and gave rise to Moholy's Jacobyan pedagogical approach ("everyone is an artist"; "everyone is talented"). Thus Moholy's later suggestion of the use of scientific imaging equipment for aesthetic ends is also ultimately based in this tradition. Moholy's suggestion, in combination with earlier amateur practice, led to the development of art microscopy, art telescoping, and art radiography in the 20s.

b. Early Weimar Years

As the war and the economic disasters which subsequently befell Germany intervened, the next photographic exhibition of this type was realized only in 1925, the year that Moholy published *Malerei, Photographie, Film*. It should be noted that Moholy's manuscript was ready by the summer of 1924, and that it appeared in the late summer or early fall of 1925.⁴² Thus the "Kino und Photo Ausstellung," popularly known by its abbreviation "KIPHO," which took place in the Funkhaus (radio building) in Berlin from September 25 to October 4 of that year, could not have acted as a suggestive source for the visual organization of Moholy's book. It did, however, give Moholy the chance to acquaint himself with the latest imaging technologies, and to see a wide variety of applied photographs, as well as examples from the history of photography. This experience must have stood him in good stead in preparing the second, 1927 edition of his book.

In keeping with the *fin-de-siècle* tradition I have outlined above, KIPHO was a combined industrial, scientific and

art photographic exhibition organized by a broad range of German photography and film-related societies, such as the Union of German Amateur Photographer Associations, the Society of German Art Photographers, the Union of Manufacturers of Photographic Products and the German Society for Mechanics and Optics.⁴³ The exhibition was organized in seven parts, and while a scientific section was not among them, scientific photographs were included among the works displayed in the division devoted to technical and photographic schools. Thus the Photographische Lehranstalt of the Lette-Verein in Berlin showed medical, mineralogical, microscopic and x-ray photographs, praised by one critic as "sehr sauber und sorgfältig ausgeführten Schülerarbeiten."⁴⁴ Another school which had a department specializing in the training of scientific imaging technologists, the Photographische Institut für wissenschaftliche und angewandte Photographie of the Technische Hochschule in Darmstadt, showed "eine Anzahl wohlgelungener Schülerarbeiten auf dem Gebiet der bildmässigen und technischen Photographie."⁴⁵ Astronomical photographs from the Observatory of Treptow were also shown, as were undersea photographs by the German master of the genre, Franz Schensky.⁴⁶ The collector and historian of early photography, Erich Stenger, showed examples from his collection of 19th century artistic and applied work for the first time.⁴⁷ This must have made a great impression on Moholy, for it would have given him an initial temporal overview of the visual results of photographic practices. Stenger's displays were subsequently included in most of the German photographic exhibitions between the wars, he cooperated with Moholy on the FIFO exhibition of 1929 and ultimately with Lucia Moholy in her photographic projects as well.⁴⁸ The Lette-Verein, the Treptow Observatory, and Schensky would also become regular exhibitors in these exhibitions. Fritz Hansen judged the KIPHO to be a great success, and a sign that Berlin had displaced Dresden as a centre of photographic technology.⁴⁹

The highly successful Deutsche Photographische Ausstellung (DPA), held in Peter Behrens' "Haus der Moden" in Frankfurt/Main during the second half of August 1926, was an event which foregrounded scientific photography to a greater extent than had been the case at KIPHO.⁵⁰ An entire section, "Gruppe IV," was devoted to scientific and historical photography, the latter drawn partly from Stenger's collection.

The prominence given scientific photography was noted in the press.⁵¹ In the catalogue of the DPA,⁵² a Dr. Seddig reviewed the history of scientific applications of the medium from Niépce on, and he set up a typology of its scientific applications which reflected the organizational structure of Gruppe IV: the use of straight photography, e.g. in the documentation of visible phenomena in geology, zoology and botany and in documenting scientific experiments; photography as an extension of our senses, such as microscopic, astronomical, spectrographic, x-ray and time-lapse photography; and the study of the photographic process itself.⁵³ In a second article on scientific photography published in this catalogue, the Frankfurt criminological photographer Georg Popp reminded visitors of the wide range of uses of scientific photography, in fields as diverse as astronomy, physics, the natural sciences, botany, zoology, anthropology, art history, medicine, surgery and law. He further pointed out some of the important scientific advances made with such aids, for example the research of metallic, crystalline and even atomic structures through microscopy.⁵⁴

As at the KIPHO, many organizations were represented among the exhibitors in Gruppe IV of the DPA, particularly those to be found in the host city.⁵⁵ For example, "Diapositive hervorragender Qualität in Röntgen- und Microphotographie," were shown by the Universitäts-Klinik and Städtischen Krankenhaus Frankfurt, and microscopic photographs of metals were displayed by Prof. Fränkel of the department of Physics and Physical Chemistry at Frankfurt University.⁵⁶ Also shown

were criminological photographs taken by Popp in association with the Frankfurt Police Department, zoological photographs by Dr. K. Priemel from the Frankfurt Zoo and Max Steckel of Kattowicz, sport pictures by P. Feller of Hanover, aerial views by Zeppelin-Luftschiffbau and the Südwest-deutsche Luftverkehrs, A.G., nature photos and "Heimatschutzaufnahmen," by Naturbild Hubert Schonger, G.m.b.H.," and astronomical photographs by Max Wolf of the University Observatory in Heidelberg.⁵⁷

Next to Gruppe IV was the section of the exhibition devoted to "Fachschulen," another locus for the display of scientific photographs.⁵⁸ As at KIPHO, at the DPA the Lette-Verein showed a "rich" selection of scientific works by its students, indeed it was the only photographic training college to do so.⁵⁹ One reviewer, unaware of the Verein's specialization in scientific work, complained about the lack of "artistic" photographs:

Die Photogr.(sic) Lehranstalt des Lette-Vereins, Berlin, hatte bei ihrer Ausstellung die künstlerische Photographie zugunsten der Röntgen- und der wissenschaftlichen photographischen Abteilung in den Hintergrund gestellt. Wohl zu unrecht, denn wir haben auf der "Kipho" gute Bilder aus der Lette-Anstalt gesehen, von denen wir zwei oder drei in Frankfurt wiederfanden.⁶⁰

Still, this reviewer particularly praised the radiographs: "Die Röntgenaufnahmen beweisen die vorzügliche Ausbildung, die den Schülern der Anstalt zuteil wird." The excellent training of the students is indicated by the following statement: "Wie uns die Leiterin der Anstalt sagte, sind alle Schülerinnen der obigen Abteilungen nach beendeter Ausbildung bisher immer in der Praxis untergebracht. Ein Beweis, dass die Lette-Anstalt einen guten Ruf genießt."⁶¹

Finally, scientific, especially medical photographs, were to be found in the industrial section of the DPA.⁶² The Agfa company, for example, in addition to the film *Das Blumenwunder* (more about which below), displayed microscopic and x-ray

photographs, including Prof. König's composite radiograph of woman, a full-body x-ray image which Moholy would also exhibit at the FIFO.⁶³

Eugen Classen, the reviewer for the Deutsche Werkbund's journal *Die Form*, who approved of "Neue Sachlichkeit" aesthetics, held that "Gruppe II," the section of the exhibition devoted to "amateur," that is art photography, was not significant. According to Classen it was dominated by photographers employing traditional Pictorialist aesthetics, since it was selected by "industry types" rather than people with serious training in the arts.⁶⁴ Classen cites the portraits of Hugo Erfurth and Walter Hege's photographs of ancient Greek statuary as examples of *sachlich* work which called attention to the mediocre quality of the bulk of the material.⁶⁵ In the manner of Moholy-Nagy, Classen cites the *sachlichkeit* of the exhibition's applied photography display as putting the "aesthetic" work into a bad light:

Es soll hier nicht behauptet worden, dass die verschiedenen Darstellungsformen, deren sich die Ausstellung bedient, sich stets glücklich zu einem einheitlichen Eindruck zusammenfügen. Bruchstellen sind in einer Zeit, in der eine hochgesteigerte, rein auf präzise Zwecke eingestellte wissenschaftliche und technische Photographie mit einer raffinierten sich "künstlerisch" gebenden Lichtbildkunst konkurriert, unvermeidlich.⁶⁶

Classen seems not to have noticed that the work of younger *Neue Sachlichkeit* practitioners such as László Moholy-Nagy and Erna Lendvai-Dircksen were also shown in the art section, and that followers of the new aesthetic, albeit its more conservative, officially acceptable variety, won prizes; thus Erfurth, Lendvai-Dircksen, Schensky, and Walter and Curt Hege.⁶⁷ Still, it is true that the DPA's "amateur" section was dominated by an outdated Pictorialist aesthetic, and that it largely omitted the work of avant-garde photographers. This is important, because the overall arrangement of the exhibition -- industrial products in one wing, and applied, scientific,

historical and art photography displays in the other -- was such that it made comparisons such as those which Classen made between applied and art photography a simple matter.⁶⁸ In any case, for those photographers and artists who were becoming interested in Moholy's New Vision, or who were concerned with applied work as potential visual source material, the DPA provided an opportunity to view an impressive array of scientific photographs aesthetically.

The prominence given scientific imagery at the DPA was also indicated by the fact that at the opening on 14 August 1926, the Agfa-produced film "Das Blumenwunder" was shown to great acclaim. "Hat sich die Photographie einerseits zum Kunstgewerbe edelster Bedeutung entwickelt," wrote one anonymous reviewer, "so ist sie andererseits zum unentbehrlichen Hilfsmittel für alle Wissenschaften geworden. Ein kleines Beispiel nur dafür ist der Film 'Das Blumenwunder', der das Wachsen und Werden der Blumen den Gästen zeigen wird."⁶⁹ This accelerated view of plant development employed the latest in time-lapse filming techniques developed by Roman Vishniac, and made a deep impression on reviewers of the show.⁷⁰ As another anonymous reviewer wrote, "die Zuschauer des Ausstellungs-Kinos sitzen vor der Leinwand und wohnen staunend der Entwicklung einer Pflanze vom Keim zum Wachsen, zur Blüte und zum Welken bei."⁷¹ This impression is echoed by Hannah Höch in her memory of her exploration of the film medium together with Moholy-Nagy during the early years of their friendship, soon after his arrival in Berlin in 1920:

...im Verfolgen und Beurteilen des sich in neuen Formen entwickelnden Films ergänzten sich unsere Meinungen immer. Auch, dass die ästhetischen Gesetze nie ausser acht gelassen werden sollten, spielte eine Rolle in unseren Anschauungen. Dokumentarfilme, die ersten, liessen uns den Atem anhalten, wenn sich da etwa Kristalle, das Wachsen der Pflanzen etc. enthüllten. Zeitraffer und Zeitlupe brachten die neuen Aspekte.⁷²

More advanced in its artistic tastes than the Frankfurt

exhibition, but providing fewer opportunities for the viewing of applied photographs, was "Hundert Jahre Lichtbild," held in Basle in April and early May of 1927. Here one could see, in addition to the by now standard historical display curated by Stenger, an array of Swiss and Budapest photographers, plus the work of avant-garde practitioners such as Frantisek Drtikol of Prague, Man Ray of Paris, and László and Lucia Moholy-Nagy of the Dessau Bauhaus, plus the more conservative *Neue Sachlichkeit* photographers Erfurth, Lendvai-Dircksen, and the Hege brothers.⁷³ While this show did not contain a separate scientific section, it did include a display of applied photography which included microscopic and other natural scientific photographs and slides, including work from the Franck'sche Verlag of Stuttgart, one of the principal publishers of popular scientific imagery.⁷⁴ Though the display of scientific photographs was not as large and varied as at the DPA, visitors to the Basle show had the chance to compare them with a greater selection of avant-garde works.

The KIPHO, the DPA and the Basle show were significant not because their organization reflected in a systematic way the new photographic aesthetic as theorized and codified by Moholy-Nagy; they did not. They potentially achieved other results: On the one hand, by carrying on the 19th century tradition of the integration of applied and art photography in grand photographic displays, they gave visitors interested only in the fine arts the chance to view the products of applied photography, and thus to expand their aesthetic range of appreciation, as proposed by Moholy-Nagy. On the other, they gave avant-garde painters and sculptors the opportunity, even if only inadvertently, to see scientific imagery. Meanwhile, judging by the number of book reviews, the success of *Painting, Photography, Film* induced the publication of a second, revised edition of the book in 1927, which received even more attention than the first edition had.

c. Moholy-Nagy and *Das Deutsche Lichtbild*

In 1927, the year that *Malerei, Photographie, Film* was republished as *Malerei, Fotografie, Film*, Hans Windisch launched his German photographic yearbook *Das Deutsche Lichtbild*. While Moholy-Nagy did not initiate this project, his New Vision was Windisch's inspiration in its production. The appearance of *Das Deutsche Lichtbild* marked the spread of *Neue Sachlichkeit* in general, and of New Vision in particular, within the German photographic discourse. As Rolf Sachsse writes, "eine innerphotographische Debatte zur Neuen Sachlichkeit begann erst in breiter Form nach 1927, mit dem Erscheinen des ersten Bandes von 'Das Deutsche Lichtbild,'" as well as the appearance of Moholy's article on photography and advertising in *Photographische Korrespondenz*, and Renger-Patzsch's book *Die Welt ist Schön* in 1928.⁷⁵ The spread of the New Vision was marked by the general trend towards the aestheticization of scientific imagery in photographic publications; the regular publication -- for the first time in an art photographic rather than a general trade context -- of art micrography, art telescopy and art radiography; and most importantly perhaps, the juxtaposition in layouts of these various genres of photographic production: of applied scientific photography with art photography, of art microscopy with scientific microscopy. By 1929, the *Neue Sachlichkeit* had supplanted the former dominance of old-style, that is, pictorialist "art photography" in German photographic magazines, annuals and exhibitions.⁷⁶

That Moholy was crucial to the conception of *Das Deutsche Lichtbild* is evident from an examination of its first volume. Windisch included a series of statements in this first yearbook, the order of presentation of which tells us much concerning the importance he placed on Moholy's approach to photography. First among the statements -- after his own -- was that of Erwin Redslob, the *Reichskunstwart* -- a kind of political guardian of culture -- of the Weimar Republic.

Redslob, known to be a supporter of Modernist culture, gives a noticeably Moholyan account of photography as "die Erfassung der Lichtwirkung eines Objektes durch Mittel des Lichtes."⁷⁷ Windisch follows this with a statement on amateur telescopic photography by the German master of the subject, Adolf Miethe, of the Charlottenburg observatory in Berlin. This placement may seem curious until one realizes that not only is the promotion of amateur photography, particularly amateur photography employing unusual means of production such as those employed in scientific research, one of Moholy's principal messages, but the placement of Dr. Miethe's statement after his own and the politician's, was a sign of respect by Windisch for the recently-deceased Miethe and this, his last manuscript.⁷⁸

It was Moholy-Nagy's statement, "Die beispiellose Fotografie," which was the first to follow those privileged by protocol. This article is, in effect, a manifesto version of *Painting, Photography, Film*, the programme for his "New Vision." And as if this privileged placement were not sufficient, Windisch added a note to Moholy's article recommending *Painting, Photography, Film* to his readers, the only such recommendation made by Windisch among the introductory texts.⁷⁹ Only after these four statements did those of P. V. Neugebauer on craftsmanship in photography; the decidedly Moholyan statement of M. von Grundherr, the Chair of the Union of German Amateur Photographic Societies; and those of Franz Grainer on "Das neuzeitliche Damenbildnis;" of Karl von Schintling on a traditional approach to "Lichtbildkunst;" of Dr. Kröhnke on amateur art micrography; and of Albert Renger-Patzsch, appear, in that order.⁸⁰

While this array of texts and their sequence communicates a tension between traditional and *sachlich* approaches to the aesthetics of photography within *Das Deutsche Lichtbild*, the predominance of Moholyan New Vision aesthetics over the more traditional ones is apparent. All the statements but the first

three -- i.e. those placed in order of protocol -- are bracketed by texts from the two most prominent representatives of *Neue Sachlichkeit* photography, Moholy-Nagy and Renger-Patzsch. Furthermore, the inclusion of the statements promoting the aesthetic use of scientific instruments in the production of art photography by amateurs (Grundherr, Miethe, Kröhnke) reflects Moholy-Nagy's program of New Vision put forward in *Painting, Photography, Film*. If one counts these contributions with those of the *Neue Sachlichkeit* photographers Moholy and Renger-Patzsch, they easily outnumber the statements made by authors (Neugebauer, Grainer, Schintling) with traditional photographic aesthetics.

Moholy's "Die beispiellose Fotografie" was an aesthetic explication of New Vision and a program for working with scientific technologies to make art photographs. As early as in his first article on photography, "Produktion-Reproduktion," Moholy-Nagy -- here in conjunction with his wife Lucia -- suggested, even if obliquely, the possibility of employing x-ray and telescopic technology in the production of art, a suggestion reiterated the following year in "Light -- A Medium of Plastic Expression."⁸¹ These ideas were systematized in *Malerei, Photographie, Film*, the manuscript for which was ready by 1924, but which was first published in 1925. Moholy was not the first to advocate the use of the microscope for creative purposes. J. Edward Barnard in England, and Romanus Schmechlik in Germany had been advocating the production of amateur photomicrographs since the early 20th century. For example, in the introduction to his 1911 handbook, *Practical Micro-Photography*, J. Edwin Barnard recommended photomicroscopy to the "photographer who has exhausted his interest in landscape, work, portraiture, or what is usually referred to as ordinary photography, and is looking for a new field of work."⁸² Thus, in calling for the creative use of photomicroscopy and radiography, Moholy -- whom Andreas Haus has described as an amateur in the best sense of the word when it

comes to photography -- was participating in an amateur tradition which advocated the use of photomicrographic equipment in the production of what was in effect aesthetic imagery.⁸³ And let us remember that well into the 20th century, most of those who displayed their work in photographic exhibitions were amateurs. Simultaneous with the development of Moholy's own theory, artists such as the German Karl Strüwe and the French Laure Albin-Guillot were engaging in the practice of art microscopy.⁸⁴

We have seen in Chapter Four that in addition to the formal dimension of Moholy's theory, there is inherent in *Painting, Photography, Film* and in his other documents of the time, a Francéan biocentric text and subtext rooted in Haeckel's Monist promotion of scientific images as models for art, communicated directly through words as well as through his choice of images to be illustrated and the visual rhetoric of his layouts. This biocentric content is emphasized by Renger-Patzsch's text "Ziele," which promotes photography as a means of exploring nature's structures, and is made explicit in Windisch's introduction to the second, 1928-29 edition of *Das Deutsche Lichtbild*. Windisch discusses the question as to whether photographs can be used as "Naturkunde" [documents of nature]. Using the camera, he notes,

we are much more likely to obtain a view of the hidden things in nature's secret places, views of an unfamiliar world, with as complete an existence of its own as that with which we are familiar. He who is able to discover all these things shows himself the real artist.... He is nearer to earth, and it is he who is seeking to penetrate her secrets.... But perhaps his friends consider his photographs as mere copies from nature what to him was a revelation or may be a great symbol of life. Yes it is a document, but a document which is at the same time an attempt to solve [the mystery of nature].⁸⁵

Windisch took Moholy's suggestions to heart, imitating the Bauhaus professor's image juxtapositions made in *Painting, Photography, Film*. Thus -- to use examples from the first

volume of *Das Deutsche Lichtbild* -- the juxtaposition of Renger-Patzsch's close-up of steam locomotive wheels with Dr. Bergner's close-up of a spoked dandelion gone to seed; the placement of Mario von Bucovich's seascape with flying birds opposite Charlotte Rudolphi's shot of the dancer Palucca taking a flying leap with wing-like outstretched arms; and an image illustrating the structure of the Zeppelin next to Ernst Krüger's photograph of grasses in winter; are illustrations of Francé's concept of *Biotechnik* akin to Moholy's equivalent juxtapositions. (Figs. 5-1, 5-2, 5-3) As Windisch himself wrote in the next, 1928/29 issue of *Das Deutsche Lichtbild*:

all that is around us, even the most complicated phenomenon, harks back to primitive form elements. It is on these that we base our conceptions of beauty, although we are no longer conscious of this elementary fact. Leaving mathematical [Grundformen] out of consideration: the construction of a blade of grass accords with the principals of modern statics; only a talented mathematician would have been able to design the honey-comb; the very first plant was patterned on the [Golden Section]; the [sphere, as the conception of perfection, completion and peace {*Vollkommenen, in sich ruhenden*} by which are determined] the domed vault of the skies...; briefly, it will be found that it is always the elementary forms on which our conceptions are based.⁸⁶

But there are further parallels. In the 1927 yearbook Miethe's photograph of the moon is placed next to colour-enhanced microscopic photographs by Dr. Kröhnke in the round format typical of photographs taken through the lense of a microscope, while Renger-Patzsch's close-up shot of an *Aasblume* juxtaposed with G. Jähne's image of a landscape formation, emphasizes equivalent textural and pattern qualities invoking the biocentric Monist *topos* of self-similarity.⁸⁷ (Figs. 5-4, 5-5) The decorative qualities of Dr. Bergner's microscopic photograph of a flea are emphasized, furthermore, by its juxtaposition with F. Wasow's image of a seated male Balinese dancer and the Neo-Vitalist crystallographer Otto Lehmann's microscopic photograph of trapezoidal fluid crystals. (Fig. 5-

6) In the 1928-29 edition, the self-similarity topos was again illustrated through the placement of Max Wolf's photo of the Milky Way opposite A. u. P. Neiner's close-up of a spider's web; a point emphasized by Windisch's statement made in that same volume that "the smallest creature is a centre around which the world moves."⁸⁸ (Fig. 5-7) The publication of Karl Hansen's micrograph of a cross-section of a hair was one of the first in a clearly artistic context of an example of amateur art microscopy. This artistic intention is indicated not only by Hansen's writing on the subject, but also by the avoidance of the traditional round format of micrography, replacing it with the rectangular frame of the art photograph or the painting. (Fig. 5-8) This choice in format works to emphasize the pictorial and textural qualities of the image over its scientific or merely wonderful ones.⁸⁹ In the 1930 edition of *Das Deutsche Lichtbild*, Windisch included Blossfeldt's beautiful close-up images of plants, and the stunning radiograph of a fish produced by the women of the Lette-Verein in the 1927 yearbook and in a 1928 article by Windisch, reappears in an advertisement designed by Moholy the following year.⁹⁰ (Figs. 5-9, 5-10, 5-11) Windisch aligns himself with Moholy's "New Vision" as opposed to *Neue Sachlichkeit* generally when he writes that "it would be quite a superficial pronouncement to label these 'documents of nature' as the [New Objectivity]. If such a photograph is [objective, it is out of purity that it is so]; if it is new, it is because we have brought a new method of seeing to bear on it."⁹¹

Despite Windisch's commitment to *Neues Sehen*, his own tastes were eclectic and allowed for late pictorialist art photography, embodying a tension with Moholy's more consistently avant-garde aesthetic. By the second volume of *Das Deutsche Lichtbild*, Windisch -- perhaps in response to negative reaction from the wider, more conservative German photographic community to his emphasis on Moholy-Nagy's ideas in the first volume, clearly stated that "'Das Deutsche Licht-

bild' ... is by no means bound to any particular school or tendency."⁹² The tensions between Moholy's avant-garde and Windisch' conservative tastes became apparent within a few years, and they erupted into a polemical exchange with Moholy-Nagy on the pages of *i10* (of which Moholy was the photographic editor) in 1929.⁹³ In his piece Windisch protests against the use of sharp, close-up shots in portraits, and writes "so must a portrait be as blurred as possible, or do we even have to cheat a bit? No -- but photography must not become microscopy."⁹⁴ In his answer Moholy pulls out the big gun of biologicistic authority when he answers that "we must remind ourselves that there is a biological way of looking at man, where every pore, every wrinkle and every freckle is of importance."⁹⁵ An indication of the extent to which Moholy had cooperated with Windisch is suggested by Moholy's reply to Windisch, in which he says "It is staggering for me to see Windisch -- whom I thought so far to be my comrade-in-arms -- using such outdated arguments."⁹⁶ The rift was not total, however, as the publication of two of Moholy's photographs in the 1930 edition of *Das Deutsche Lichtbild* indicates.⁹⁷

d. The First Exhibitions Based on "New Vision"

Rehearsed in *Painting, Photography, Film* and *Das Deutsche Lichtbild*, and paralleled unconsciously in the great Weimar German photographic exhibitions, by 1928-29 Moholy's aesthetic principles were incorporated into three art exhibitions. The first of these, "Foto -- Malerei -- Architektur," opened on 12 February 1928 at the Itten Schule, Johannes Itten's private Berlin art school founded in 1926, three years after he had been replaced at the Bauhaus by Moholy-Nagy. While it has not proved possible to ascertain the identity of the curator(s), the material and conceptual linkages with Moholy and the Dessau Bauhaus are apparent. Adopting both the Bauhaus' and the Itten Schule's interdisciplinary approaches, the curator(s) integrated modernist art and architectural drawings

with avant-garde and applied photographs in the show. Both Kállai's review of the exhibition and the text of the invitation to the opening indicate that the groupings of paintings, photographs and architectural drawings were proximate, with the intention of evoking interdisciplinary comparisons:

Die Veranstaltung der Kunstschule Johannes Itten sollen zur Beurteilung moderner Gestaltung und Produktion Gelegenheit geben und -- soweit das durch Vorträge und Ausstellungen möglich ist -- zur Klärung der Probleme beitragen.

Durch die Gegenüberstellung von:

FOTO -- MALEREI -- ARCHITEKTUR

Soll die Abgrenzung und Verschiedenartigkeit der einzelnen Gebiete deutlich werden.⁹⁸

This emphasis on the differentiation of media echoed Moholy's warning in *Malerei, Photographie, Film* against the "blurring of boundaries" between creative techniques, and his concomitant emphasis on the organic emergence of works from the materials and technologies employed to make them.⁹⁹ Of course in these cases stressing difference called attention to the integrative intentions of multidisciplinary projects such as Moholy's book and this exhibition, and of the interdisciplinary schools that hosted them. Such a dialectical pairing would have been appreciated by Leftist intellectuals such as Moholy and some members of the Itten Schule.

The array of art and architecture in the Itten Schule show reflected its Bauhaus orientation, and the crucial link here may have been -- rather than Itten himself -- Otto Umbehr, the former Bauhaus student who was then teaching photography at the Itten-Schule, and who would have been familiar with Moholy's ideas on photography.¹⁰⁰ The architectural exhibit consisted of the competition entries for the Geneva League of Nations Building and the Peterschule in Basle by the Swiss Bauhaus instructor Hans Wittwer and his partner, the new Bauhaus master and soon-to-be director, Hannes Meyer. In addition to works by the two most prominent Bauhaus masters Kandinsky and Klee, "Foto -- Malerei -- Architektur" included

paintings by Otto Meyer-Amden, a Swiss friend of Hannes Meyer and Ernő Kállai, and sculptures by Ewald Mataré, an artist supported by Kállai, whom Hannes Meyer was soon to name as the Bauhaus' publicist.¹⁰¹

The selection of photographs was more advanced in Berlin than in the Basle show of the previous year, and omitting the more conservative *Neue Sachlichkeit* photographers Erfurt, Lendvai-Dirksen and the Heges, as well as foreign practitioners, focused on photographers associated with the Bauhaus (Umbehr, László and Lucia Moholy-Nagy, Heinrich Spaemann, and Karl Staub¹⁰²). The exhibition of work by Albert Renger-Patzsch leads one to recall that he was first drawn into the discourse of the avant-garde by Moholy-Nagy, who published his work in *Malerei, Photographie, Film*.¹⁰³ The crucial innovation in this show, and its aspect that most clearly calls to mind Moholy's book, is the exhibition of nature photographs, scientific x-ray and microscopic photographs from sources such as the Photographische Lehranstalt of the Lette-Verein, Luft-hansa's photographic office, and film stills from the avant-garde Soviet cinema.¹⁰⁴ Thus, not only was this one of the (if not *the*) earliest group show(s) of the German photographic avant-garde, it was the first to display applied, including scientific, photographs in an avant-garde artistic context. In *Das Kunstblatt*, Paul Westheim noted these developments:

In der Itten-Schule eine programmatische Zusammenfassung heutiger Kunstmöglichkeiten ... Architektur ... und daneben gleichwert und gleichberechtigt die aus der heutigen Technik erwachsene Kunst der Photographie und des Films. Diese Photographen: Renger-Patzsch an der Spitze, haben es aufgegeben, Malerei zu imitieren; mit der Linse ihrer Kamera, die präziser, objektiver, bestimmter sieht als das Auge, haben sie angefangen, den Sachwert der Dinge zu fassen. Mit den Röntgen-aufnahmen des Lettevereins beginnt man in sie hineinzudringen. Es wird Welt erschlossen, die immer da war; aber so noch nicht erkannt werden konnte. Keine Frage, auch das ist schöpferisches Gestalten; die Photographie ist im künstlerischen Sinne schöpferisch geworden, als sie aufhörte, Kunst nachzumachen.¹⁰⁵

Though he does not explicitly refer to Moholy's theory of New Vision, Westheim has read its principles from the exhibition: not only do the works of a *Neue Sachlichkeit* photographer such as Renger-Patzsch, and of applied practitioners such as the unnamed female students of the Lette-Verein, objectively reflect reality, they are equally capable of creative expression.

While Kállai's review of the Itten Schule show could be read as suggesting that the applied photographs were integrated with the art photographs in the installation, he does not specifically say they were. Whether or not this was the first exhibition in which scientific photographs were integrated with art photographs in a single installation, it was, to my knowledge, the first show in which scientific photographs were shown in close proximity to works of modernist art within an avant-garde artistic context, and so it likely inspired Kállai's 1931 proposal for the juxtaposition of scientific photographs and works of modernist art in the planned Leipzig "Kunst und Wirklichkeit" exhibition, finally realized in the "Új világkép" show held in Budapest in 1947.

At about the time that the show was on view at the Itten Schule, Moholy published a resumé of his ideas on the New Vision, "Neue Wege in der Photographie," in the mainstream photographic journal *Photographische Rundschau und Mitteilungen*, devoting particular attention to the production of photograms.¹⁰⁶ Both the title of this article and its synthetic impulse were adopted by the managing director of the Jena Kunstverein, the avant-garde artist and designer Walter Dexel, for an exhibition of *Neue Sachlichkeit* and applied photographs based on the Itten Schule show which took place in Jena from 25 March to 6 May 1928. "Neue Wege der Fotografie" was to be the last major exhibition arranged by Dexel for the Jena Kunstverein, where he had worked since 1916. Members of the Board of Directors, apparently under pressure from the Carl Zeiss firm of precision optics -- the Kunstverein's financial supporters -- failed to nominate Dexel to the posi-

tion in 1928.¹⁰⁷ The Zeiss firm's position is ironic, as it was precisely the use of sharp-focus lenses such as Zeiss's which was being promoted by Drexel in this exhibition.

"Neue Wege der Fotografie" has been described as the "erste Zusammenstellung zeitgenössischer neuer Fotografie," the first in which "die fotografischen Ergebnisse aus den Bereichen Industrie, Technik und Wissenschaft mit bewusst gestalteten Fotografien gezeigt [waren]."¹⁰⁸ As we have seen, this is not the case, for though the Itten Schule show was not exclusively photographic, its photographic part had already done all this. In fact there is evidence that "Neue Wege der Fotografie" was an adaptation of the relevant section of "Foto -- Malerei -- Architektur," though it must be kept in mind that as yet, no installation photographs, exhibition lists, or other documents on either of the two exhibitions have come to light, and so my proposal remains hypothetical.¹⁰⁹ Most of the artists whose works were displayed in Jena were those Berlin and Bauhaus photographers shown at the Itten Schule; Renger-Patzsch, László and Lucia Moholy-Nagy, Otto Umbehrr, Errel (Richard Levy), and Walter Peterhans.¹¹⁰ Added at Jena were the works of the Dresden progenitor of *Neue Sachlichkeit* photography Hugo Erfurt and of the Frankfurt photographer Hannah Reeck, while those of the Atelier Nolte and of the Spaemann and Straub team were omitted.¹¹¹ The list of categories of applied photographs in the Jena show reiterates that of the "Foto -- Malerei -- Architektur" exhibition almost exactly. While the Jena brochure refers to "Porträts -- Naturaufnahmen -- Fliegeraufnahmen -- Wissenschaftliche Aufnahmen -- Filmphotos -- Fotomontage -- Reklamephotos -- Photogramme," the Itten Schule opening invitation refers to "Naturaufnahmen, Porträts -- Fotomontage, Reklamefotos / Wissenschaftliche Aufnahmen, Röntgen und Mikrofotos, Farbfotos, Filmfotos der Sammlung Marianoff."¹¹² The Jena exhibition opened 25 March, three weeks after the Itten Schule exhibition closed on 13 March,¹¹³ an optimal interval for the

transport of materials from Berlin and their reinstallation in Jena, and in his article "Neue Wege der Photographie" Dexel refers to the exhibition in a manner which suggests that he had not curated it himself.¹¹⁴

Even if not an adaptation of the Itten Schule show, "Neue Wege der Fotografie" was certainly closely modelled on it, and as the very title indicates, on the ideas of Moholy-Nagy and his "New Vision." Dexel, one of Moholy's earliest acquaintances in Germany, would have been familiar with Moholy's ideas as they developed at the nearby Weimar and Dessau Bauhauses,¹¹⁵ and the previous November 18, he would have had the opportunity to hear Moholy's slide-illustrated talk on "Malerei und Fotografie" held at the Arbeitsgemeinschaft für das graphische Gewerbe in Magdeburg, a city near Jena.¹¹⁶ The fact that the Jena press devoted attention to Moholy's work displayed at the exhibition is a further indication of his importance with respect to it.¹¹⁷

That "Foto -- Malerei -- Architektur" preceded "Neue Wege der Fotografie" does not, however, detract from the latter's historical importance. Dexel's exclusion of painting and architecture focused attention on photography, and hence on the visual and structural relationships between its artistic and applied practices.¹¹⁸ As Dexel pointed out in an article published after being fired, his exhibition program at the Jena Kunstverein -- much like Itten's program at his school and the Bauhaus program -- had been one which attempted to integrate applied arts with new artistic developments. In effect, it had been an integrative, interdisciplinary program, which wished to connect art to everyday life.¹¹⁹ The integration of art photography with applied photography was a natural outgrowth of this goal.

An exhibition integrating art with scientific photography, took on a special meaning for being staged in Jena, Ernst Haeckel's long-time home. The continued presence of both the "Phyletisches Museum" which Haeckel helped establish in 1907,

and the "Ernst Haeckel Museum," established by the Karl-Zeiss Stiftung in his house -- the Villa Medusa -- after his death in 1919, made available for permanent public viewing an array of scientific images, including Haeckel's.¹²⁰ The Ernst Haeckel Museum reminded residents and visitors that Moholy's project of the aestheticization of scientific photography was to be situated within the context of the *fin-de-siècle* incorporation of scientific imagery into the discourse of art initiated by Haeckel himself through his *Kunstformen der Natur*. That Dexel was aware of Haeckel's relevance to the show is suggested by the fact that he included in it portraits by Hugo Erfurth, including one of old man Haeckel himself.¹²¹

Still, Dexel's description of the exhibition suggests with less ambiguity than does Kállai's review of the Itten Schule show, that art photography was not integrated with applied work in the hanging.¹²² Thus, the first room showed the portraits by Erfurth (one can imagine Erfurth's image of Haeckel's formidable visage facing the arriving visitor...), the second featured the work of Renger-Patzsch, and in a third were to be found Bauhaus works: Umbo's portraits, Moholy-Nagy's photograms and Lucia Moholy's architectural photographs and portraits. While Dexel mentions aerial views, film stills, and advertising photos, he does not mention the location of the scientific photographs, nor does he suggest that they were installed with the art photographs, and it is to be assumed that they were exhibited in another chamber. Though Dexel does not ascribe importance to the way in which the aesthetic appreciation of applied photography can inspire art work in his description, his account of Renger-Patzsch's work indicates that he understood the design principles underlying Moholy's assertions in this regard: "Die Photographie hat sich gelöst von ihrem bisherigen Stoffgebiet, das nur uns geläufige Vorwürfe des Malers umfasste und kann plötzlich alles. Sie fasste den Blick des Tieres ebenso wie Stoff und Struktur seines Körpers.... Solche Photographien erschliessen uns eine

neue Welt, dem Auge sonst nicht wahrnehmbar...."¹²³

Within a year of the Jena show's closing, the first large-scale exhibition devoted to *Neue Sachlichkeit* photography was mounted from 20 January to 17 February 1929 at the Museum Folkwang in Essen.¹²⁴ Given Albert Renger-Patzsch's connections with the museum dating back to the early 20s, his work for the museum's first director Ernst Fuhrmann, and his continued proximity to it, it is not surprising that the Museum Folkwang mounted "Fotografie der Gegenwart." In a statement published in *Photographische Rundschau und Mitteilungen* in 1929, the director and curator Kurt Wilhelm-Kästner, like Drexel and others, expressed the view that a new photographic movement was in formation, and his intention to give expression to this development even though

[e]s ist aber durchaus noch kein einheitliches Bild, das sich hier bietet, es sind vielmehr mehrere nebeneinander herlaufende Strömungen zu beachten. Verschiedene Einzelercheinungen treten auf, die erst in ihrer synthetischen Zusammenfassung den neuen Weg ergeben werden. Als Reaktion zur bisherigen Einstellung muss zunächst die sich fast allenthalben ausprägende Neigung zu klaren, streng gegenständlichen Bildauffassungen angesprochen werden.¹²⁵

While no documentation of this exhibition survived the war,¹²⁶ so we cannot be certain of the institutional and personal connections involved in its preparation, the concept of exhibiting *Neue Sachlichkeit* photography in conjunction with applied photographs initiated in the two 1927 exhibitions was adopted in this undertaking. That the overall concept of the show was based on Moholy's New Vision was made apparent by the fact that he was invited to give a slide-illustrated lecture on "Fotografie und Film der Zukunft" on the occasion of the closing of the show on 17 February 1929.¹²⁷

A list of exhibitors in the original Essen venue has not as yet come to light, but the exhibition toured Germany during 1929, and the exhibitors' list prepared for the last, Magdeburg showing in November and December of 1929 has, and will do

as a basis for analysis, for though some works were added, the bulk of the exhibition seems to have remained the same.¹²⁸

This list reads like a who's who of the contemporary German avant-garde photographic world, with important additions from Paris such as Berenice Abbott, Eugène Atget, André Kertész, Germaine Krull, and Man Ray. Important also is the display of works by photographers who engaged in the contemporary fashion for close-up nature photography, such as Änne Biermann, Karl Blossfeldt, Hein Gorny, Eli Lotar, Albert Léon, Walter Peterhans, Albert Renger-Patzsch, and Paul Wolff.¹²⁹ The avant-garde works in the show were included in the section entitled "Freie fotografische Gestaltung" and "Fotomontage." Presumably most of the art photographs were installed in the sections "Das schöne fotografische Bild (künstlerisches Sehen)." The range of applied photographs was similar to those of the Berlin and Jena shows of the previous year and were located in the section "Die Aufnahme im Dienst der Wissenschaft und Forschung."¹³⁰ Film stills (including Russian film stills as in Berlin and Jena) were arranged in a special section ("Filmaufnahmen").¹³¹ The greater financial resources available also allowed films to be shown "in einer Auswahl, dass die verschiedenen technischen und künstlerischen Möglichkeiten [des Films zeigen]: Zeitlupen- und Zeitrafferaufnahmen, Zeitwendaufnahmen, abstrakte Filme (Eggeling, Richter, Man Ray), Tierfilme, chemische Filme (Mikroskopie), Trickfilme, Reisefilme, Künstlerfilme."¹³²

Again, besides lists of sections, no information is available as to the installation of the exhibition, but it seems that works of the different categories were installed in separate displays. But as before, the very fact that a wide range of applied photography, including scientific imagery was included in a mainly art photographic exhibition is significant.

This series of exhibitions induced a discourse on photographic aesthetics, one of whose major players was Moholy-Nagy's old friend Ernő Kállai. In his review of the Itten

Schule exhibition, Kállai approved of the comparative curatorial intention, and he was enamoured of the "grosse Anzahl hervorragender" photographs and photo-based art works, even though he thinks that the show did not entirely succeed in defining boundaries between media: "Trotzdem diese Gegenüberstellung nicht genügend unmittelbar und eindeutig erfolgt, wird einem aufmerksam Betrachtenden dennoch Gelegenheit geboten, wesentliche Einblicke zumal in die besonderen Möglichkeiten der modernen Photographie zu gewinnen."

In his article "Malerei und Photographie" (which appeared in 1927 in the Dutch periodical *i10* for which Moholy was photography editor) Kállai had dealt with some of these possibilities.¹³³ Indeed this article prefigures the types of comparisons the curators had intended in the Itten Schule show; it recapitulates Kállai's critical predilections to a surprising extent. Not only does it feature works by artists he was supporting, but it avoids the currently fashionable *Neue Sachlichkeit* painting, while promoting *Neue Sachlichkeit* photography and applied photographic prints of nature and reality, just as Kállai was arguing in his current writing.¹³⁴

Concerning the inevitable comparison between Modernist painting and *Neue Sachlichkeit* photography, in his 1927 article Kállai privileges painting over avant-garde art photography as a creative medium because of its ability to render facture or surface qualities. As Kállai wrote in this article, "freely floating immateriality can be attained only by light emanations, in particular the nonobjective light formations of photography. ... They strip the vision of things of its materiality." This view proved to be highly controversial, and set off a well-known debate on the subject in *i10*, with most responses, notably Moholy's, affirming the presence of facture in photography.¹³⁵ "But with this loss in creative life" continues Kállai, photographs "acquire in turn the wonderful, vibrant asset of movement and arrive at the moving photograph, that is film."¹³⁶ As a kinetic and thus intensified form of

photography, for Kállai, the central cultural opposition of his time becomes that of painting and film. He concluded "Painting and Photography" with:

Painting or film? -- that is the fateful question of visual creation of our time. This alternative is an expression of the historical turning point in our mental existence. We stand at the frontier between a static culture that has become socially ineffectual and a new, kinetic reformulation of our world picture that is already penetrating the sensibility of a mass audience to an unheard-of degree.¹³⁷

Despite the possibilities of photography and film, as early as his article "Malerei und Film" of 1926, Kállai expressed the view that painting continued to represent values unattainable through any other medium:

Die unbeschränkte Extensität des Films ist durch die photographische mechanisierung des Bildes ermöglicht. Demgegenüber bleibt das Gemälde selbst in seiner intellektuell und sachlich strengsten Form immer noch eine organische Gestaltung mit der ganzen Unmittelbarkeit menschlicher Selbstäußerung und mit der ganzen Hoheit geistige Synthese.¹³⁸

The installation at the Itten Schule show also offered the possibility of comparing representational photographs, both *Neue Sachlichkeit* photographs and applied -- including scientific -- photographs on the one hand, with avant-garde art photographs and photograms on the other. Because of their unparalleled ability to represent the world, and because of what he saw as the lack of facture in photography, Kállai valorized the former over the latter. In "Malerei und Film," commenting on the decreasing public interest in painting, Kállai noted the power of photography and especially of film to represent nature: "er vermag das Erblühen des kleinsten irdischen Lebewesen mit einer strahlenden Deutlichkeit vor unser Auge zu führen, die absolut naturgetreu wirkt, ohne sentimental objektbehaftet zu sein wie die Malerei, wenn sie genau darstellen will."¹³⁹ Because he saw these possibilities as inadequate, Kállai was more interested in the ability of these media to image nature and to induce the wonder of nature

in their viewers, than he was in their tonal, textural or other formal possibilities the way that Moholy-Nagy was.

This engagement with photography's and film's ability to represent what Kállai later termed the "demonic" in nature went back as far as 1923, and the appearance of the "Schelpennummer" of *Wendingen* discussed in Chapter Four. As we have seen, this was the first occasion on which art photographs made using means normally reserved for scientific or medical purposes were produced and distributed within avant-garde artistic circles. In his 1928 review of Karl Blossfeldt's book *Urformen der Kunst*, Kállai referred to "the sonderheft der holländischen zeitschrift 'wendingen' mit dem herrlichen röntgenaufnahmen nach muscheln ... die naturformen so offenbarungsreich zu zeigen vermocht hatte...."¹⁴⁰ Based on the foregoing we can safely assume that seeing Moholy-Nagy's book *Malerei, Photographie, Film* when it first appeared in 1925, Kállai would have been more impressed with Renger-Patzsch's photographs than he was with Moholy's photograms. Later, in his glowing review of "Die Welt ist schön," Renger-Patzsch's book of photographs, Kállai remarked on the cheapness of the snapshots and photographic images of popular and mass cultural organs and on the facile quality of abstract photograms. By employing the medium for what he saw it as doing best, Kállai saw Renger-Patzsch as opposing this trend.¹⁴¹

In 1929, in his review of the "Film und Foto" exhibition which, as we shall see, Moholy-Nagy was largely responsible for, Kállai made the same point, extending it specifically to scientific photography.¹⁴² Kállai again warns against the facile nature and cheapness of the profusion of reportage photos in the show. Similarly, he sees Moholy's photograms as empty "lichtspielerei" even if they are masterfully executed. Dismissive of avant-garde art photography because of its lack of facture, Kállai reserved his praise for applied, especially scientific photography, for example, the X-ray images produced anonymously by students and teachers of the Lette-Verein:

"Kein Wort gegen die tatsächlich dokumentarische Photographie, wie man sie in illustrierten Wochenschriften, in Kinoberichten, Kulturfilmen und erst recht in wissenschaftlichen Publikationen auch volkstümlicher Art zu Hunderten und Tausenden sehen kann," including photographs of this kind in the exhibition itself.¹⁴³ Among art photographers, Kállai praised those such as Blossfeldt, Albert Renger-Patzsch, August Sander and Werner Gräff, who -- in the manner of the art photography which came to be seen as "neusachlich," that is as part of the 'New Objectivity' in Weimar German art -- utilized what he saw as the virtues of applied photography to objectively reflect reality in their work, in a manner impossible to artists working in other media. "In solchem optischen 'Dienst am Objekt,'" writes Kállai, "kann der Photograph sich bis zum Bekenner einer hohen Welt- und Werkgesinnung steigern."¹⁴⁴

And this is the point at which Kállai articulated what -- as we have seen in Chapter Four -- was clearly implied but left largely unspoken in Moholy's biologicistic aesthetic writings: the ability of photography and film to induce the feeling of wonder for nature, of the *kosmische Einheitsgefühl*. In his article "Bildhafte Fotografie," in a paragraph on Renger-Patzsch, Kállai articulates these thoughts:

In the end, photography can attain its most enduring and profound effects only through the pursuit of reality, especially natural reality. Nature offers countless constellations of a vast variety of forms, each the product of innermost necessity, each with its own uniquely powerful expressiveness and order, and all of them able to be understood in spatial-pictorial terms. The camera can give sensory immediacy to the most hidden germ cells as well as the most monumental phenomena in this abundance of organic life; it satisfies our sensibilities with the subtlest stimuli and the most vehement sensations.... The most sophisticated photogram cannot match the wondrous chiaroscuro structures of a simple X-Ray.¹⁴⁵

Thus, it was *Neue Sachlichkeit*, especially close-up nature photography and scientific imaging that Kállai valorized in

his discourse on photography. It was also Kállai who articulated most clearly the biocentric sense of such images. Moholy-Nagy, true to his biologicistic-functionalistic predilections, tended to avoid *vitalmystisch* enunciations despite his biologicistic rhetoric. But while they espoused different brands of biocentrism, and while he disagreed with Moholy on the aesthetic specifics of the various photographic genres, it was the integration of various types of photography effected by Moholy's biocentric New Vision that encouraged Kállai to make such comparisons in the first place.

Still, while Moholy's aesthetics and even his phrasing were adapted in these three exhibitions, they do not seem to have been carried to their logical conclusion in the hanging of the shows. The introduction of a new visual rhetorics of juxtaposition into a three-dimensional display, first rehearsed in *Malerei, Photographie, Film* in 1925, and then on the pages of *Das Deutsche Lichtbild*, awaited the direct curatorial involvement of Moholy in an exhibition project.

e. *Film und Foto* and the "New Vision"

It was the German Werkbund's "Film und Foto" exhibition first held in Stuttgart from 18 May to 7 July 1929, that involved Moholy directly in the curating and hanging of such a photographic exhibition. Up to that time, the "FIFO," as it was commonly known, offered the most important opportunity for a mass audience to view contemporary avant-garde photographic practice in conjunction with a wide variety of applied photographs. FIFO was conceived by and organized under the direction of Gustav Stotz and his Württemberg working group of the German Werkbund in Stuttgart. In this discussion of FIFO, I will first demonstrate Moholy-Nagy's central role in the project, then I will show how his concern with showcasing his conception of a New Vision led to the aestheticization of the scientific and other applied images included in it.

An official version of the project's organizational

structure is given in the *Gliederungsplan* included of the exhibition catalogue. At the apex is Gustav Stotz, *Gesamtleiter* of the undertaking. Next is the Selection Committee, which consisted of three prominent members of the South German artistic community: Hans Hildebrandt was an art history professor at the Technische Hochschule in Stuttgart; the Werkbund pioneer Bernhard Pankok was an artist, architect, designer and director of the Stuttgart Kunstgewerbschule; and Jan Tschichold -- whose influential book *Die neue Typographie* had appeared in 1928, just as work on the show began -- was a prominent Modernist graphic designer working in Munich.¹⁴⁶ Following this were the "Mitarbeiter," leading figures of the avant-garde who acted as national curators in Germany and selected foreign countries (France was notably not among them). Thus Lazar El Lissitzky selected and designed the installation for the Soviet gallery, Edward Steichen and Edward Weston chose the American material, Piet Zwart did so for the Netherlands and Siegfried Giedeon for Switzerland.¹⁴⁷ Moholy-Nagy and Otto Baur, *Geschäftsleiter* of the German Werkbund, were responsible for Germany, while Hans Richter was listed separately as artistic director of the film program.¹⁴⁸ If one were to depend only on this plan for a picture of the project's organizational structure, one would get the impression that Moholy-Nagy played an important, but by no means central part in it. But as historians who have dealt with this exhibition have realized, both textual and circumstantial evidence indicate that while somewhat ambiguous, Moholy's role was a leading one in the curating of the show.¹⁴⁹ The fact, for example, that an entire gallery was devoted to Moholy's own work, containing no fewer than 97 photographs, photograms and photomontages -- by far the largest representation by any one artist in the show -- is an indication of the weight Moholy pulled, as well as of his capacity for self-promotion.¹⁵⁰ I would go a step beyond this view however. As in the case of Windisch and *Das Deutsche*

Lichtbild, I wish to demonstrate that Moholy exercised a decisive effect on Stotz' conception of the entire project, and on its overall organization and installation as well. I will suggest that he used his influence not only to promote his own work, but to shape the show into what was in effect a three-dimensional restatement of *Malerei, Photographie, Film*, of his theory of "New Vision." Furthermore, I wish to propose that Moholy's presentation of the "New Vision" in FIFO had the effect -- through the actual installation strategies he deployed -- of aestheticizing applied, especially scientific photography for a mass audience.

According to the memory of Mia Seeger, the German Werkbund's administrative assistant in Berlin, FIFO was realized over a year-and-a-half period at most, with a staff in Stuttgart consisting of Stotz, his wife, and a secretary; and another in Berlin including Otto Baur, Moholy-Nagy and Seeger herself, who dealt mostly with customs and film censorship problems.¹⁵¹ Seeger's statements make clear that despite the placement of the Berlin office on the same level as foreign *Mitarbeiter* in the *Gliederungsplan*, it was in fact -- along with Stotz's Stuttgart office -- the centre of the project's organization. If this is true, then it is easy to see how Moholy-Nagy, the only specialist in photography among those listed as working at the Berlin office, and arguably the leading photographic theorist in Germany at that time, would have largely determined the show's conceptual drift. In following Jan Tschichold's advice to hire Moholy-Nagy, furthermore, given Moholy's high profile on the contemporary German avant-garde art scene, Stotz must have been aware of what he was doing.

Besides the implications of Seeger's remembrance, Moholy's centrality to the aesthetic program of the show is documented by selection committee member Hans Hildebrandt, who published at least two articles on the FIFO. Given his position and his proximity to Stotz in Stuttgart, these statements

bear authority. In one of them Hildebrandt wrote that "[d]ie Zusammenbringung und Zusammenstellung des Materials nach systematischen Gesichtspunkten wurde Professor Moholy-Nagy anvertraut...."¹⁵² As the *Gliederungsplan* and contemporary photographs indicate, the exhibition was designed in elegant Modernist style by Ernst Schneidler, professor in the Graphics Department at the Staatliche Kunstgewerbschule of Württemberg in Stuttgart.¹⁵³ But Hildebrandt -- diplomatically including his colleague on the Selection Committee -- wrote that "Prof. Schneidler ... hat die Schau ebenso reizvoll wie übersichtlich nach Moholys Organisationsplan in den geräumigen Pankokschen Ausstellungshallen der Stadt gehängt."¹⁵⁴ Hildebrandt also writes that the "Sammlung und Bearbeitung des Materials lagen in den Händen des Malers Prof. Moholy-Nagy, Berlin...."¹⁵⁵ While this latter statement made in *Photographische Rundschau und Mitteilungen* was later qualified by a correction presumably originating in Stotz' office which read "Bemerkt sei ferner, dass der grösste Teil der ausgestellten Bilder von Gustaf Stotz (nicht Moholy-Nagy) besorgt wurde,"¹⁵⁶ it is noteworthy that the statements on Moholy's responsibility for the conception and overall organizational plan of the exhibition were not corrected. Thus, we can safely state that Stotz in effect gave Moholy-Nagy responsibility for curating the German portion of the material -- by far the largest -- and, in conjunction with Schneidler, for designing its layout and organisation. The critic Prodest, who seemed to have been well informed of the inner workings of the exhibition's organization, summed up the contradiction between Moholy's official and actual roles in a popular photographic journal: "Stotz erfreute sich der Hilfe gleichgestellter Mitarbeiter, unter denen Professor Moholy-Nagy genannt sei, der nicht nur scheidend, sondern auch aufbauend in der Ausstellung beteiligt ist."¹⁵⁷ Stotz's failure to give Moholy credit may have been the result of rivalries amongst the organizers now impossible to reconstruct.¹⁵⁸ Despite this, the popular perception seems

to have been that Moholy was "der Leiter oder Arrangeur der Stuttgarter Ausstellung," as one critic put it.¹⁵⁹

As Hildebrandt stated, Moholy's role was more essential than merely being responsible for the exhibition's layout. Stotz' and his selection committee's intentions were to present the results of the so-called "new photography" or "neue Sachlichkeit,"¹⁶⁰ catch-phrases for several different genres of Modernist art photographic work, principally sharp-focus art photography (as opposed to the Pictorialist *Kunstphotographie* in vogue since the turn of the century), avant-garde art photography such as Moholy-Nagy's and Man Ray's photograms, and journalistic and propaganda photography, such as Sasha Stone's work and the imagery of Soviet photojournalist-propagandists on display in Lissitzky's Russian gallery. Stotz's programmatic statements on the exhibition indicated, however, that his intentions went beyond the mere presentation of new photographic styles; the show was conceived of as a presentation of Moholy-Nagy's "New Vision."¹⁶¹

An examination of Stotz's two conceptual statements on the exhibition reveal that they were constructed according Moholy-Nagy's theory of a New Vision, as outlined in the two editions of *Painting, Photography, Film*, and in a number of articles. That the show was more than a presentation of the results of *Neue Sachlichkeit* photography was underlined by further projects assigned to Moholy: First, as the designer of the overall layout of the thirteen successive galleries in the exhibition, and as curator of "Raum 1," the programmatic introductory space, Moholy was responsible both for the conceptual introduction, and in effect, for the determination of the viewers' experience as she or he passed through the show. Second, Moholy designed the cover of the exhibition's prospectus and its poster, jobs which set the visual tone for the FIFO project and which were emblematic of it as a manifesto of New Vision. (Figs. 5-12, 5-14) The montage of the four-times repeated image of Georg Muche's photograph of himself and his

assistant at the Weimar Bauhaus reflected from below off the surface of a metallic sphere proclaimed its New Visual and Modernist thematics by virtue of its illustration of at least three characteristics of the New Vision according to Moholy-Nagy: the "worm's eye" view, the fish-eye distortion on the convex surface of the sphere, and the employment of photomontage technique to create novel spatial relationships, emphasized by the diagonals of the text above it.¹⁶²

Raum 1 received the most media attention of all the exhibition spaces in this highly successful and publicized event. Moholy-Nagy mounted a text panel at the entrance to Raum 1. On this panel, fortunately quoted and so preserved by Prodest, Moholy summarized his program for the New Vision:

In this room the most important stages in the history of photography are shown. The emphasis is on the presentation of photographic elements, whose mastery can lead to synthetic photographic results. These elements are essentially the following: The possibility of producing genuine documents: static, kinetic in the modulation of light intensities, novel points of view, enlargements, microscopic and X-ray photographs, mechanical distortions of reality, direct design with light (photograms), penetrations and simultaneous projections whose predecessor is the photomontage.¹⁶³

Because of its positioning, this text -- like Raum 1 as a whole -- functioned as an introduction to the entire exhibition. On the rear wall of Raum 1, just as the visitor exited it and entered the twelve galleries which comprised the main body of the show, Moholy mounted the enlarged text "Wohin geht die photographische Entwicklung?" The use of the interrogative both invites the visitor to speculate on the future of photography in light of its past, and to judge the works in the show by the standards of Moholy's New Vision. (Figs. 5-13, 5-14) Thus the whole experience of FIFO was determined by Moholy's organization of Raum 1. As Prodest noted, "[g]leichsam einen Führer durch die Ausstellung bildet der erste grösste von Moholy-Nagy ausgestaltete Raum..."¹⁶⁴

According to descriptions Raum 1 opened with an historical overview of the development of photography assembled from Erich Stenger's collection. While Moholy employed Stenger's material, unlike the big photographic exhibitions which preceded this one, he integrated it into his overall concept of the installation. He posted a text panel which maintained that "Daguerre konnte nicht retuschieren und nicht kopieren. Daher besitzen seine Aufnahmen die starke dokumentarische Eindringlichkeit." With Talbot and Hill this purity declined and painterliness entered the picture, the text held.¹⁶⁵ Prodest notices one of Moholy's rhetorical strategies:

In diesem Saale beginnt die Reihe mit einer erlesenen historischen Bildschau, die Professor Dr. Erich Stenger-Berlin aus seiner grossen Sammlung zur Verfügung gestellt hat. Und im Vergleich mit diesen alten Erzeugnissen aus der ersten Hälfte des vorigen Jahrhunderts auf Metall- oder Glasplatten stellt man mit Erstaunen, aber auch mit Genugtuung fest, dass die neue Sachlichkeit, der die Ausstellung ... das Wort redet, übereinstimmt mit der frühesten photographischen Bildwiedergabe; das ungekünstelte haarscharfe Bild kehrt zurück....¹⁶⁶

Moholy wished to justify the *sachlich* approach of some of the new photography by showing its similarities to the earliest examples of the medium.

The historical preview was followed by an array of applied photographs interspersed with art photographic work utilizing material from Moholy's own collection, a good portion of it used in his book. According to one description, "[i]n diesem Saale nehmen Tatbestandsaufnahmen und Reporterphotographien einen grossen Raum ein, auch Tierdarstellungen, Pflanzenbilder, Mikroaufnahmen, Röntgendiapositive und Bilder aus dem Weltkrieg." ¹⁶⁷ According to the FIFO catalogues Moholy showed pictures from Karl Blossfeldt's book *Urformen der Kunst*, microscopic and x-ray photographs by I.G. Farbenwerke (Agfa), the Lette-Verein and the Kaiser-Wilhelm Institut, aerial photographs by the Luftschiffbau Zeppelin and the Hansa Luftbild, astronomical photos by the Treptow Observ-

atory, and zoological photographs by Hedda Strauss and the Berlin Zoologischer Garten.¹⁶⁸ One of Moholy's points in juxtaposing early photographs with applied ones was that they shared in the quality of directness, and were both better for them. In their reviews Haceel and Mathies-Masuren misunderstood Moholy's intention and complain that the curators acted as though applied photography had never been appreciated for its own, sharp, unretouched qualities in the past.

Es ist an dieser Stelle kaum nötig zu sagen, dass auch in den bis dahin an der Photographie interessierten Kreisen gegen die manuelle Bearbeitung, gegen die Verschwommenheit und die unsaubereren Töne der falsch verstandenen Druckverfahren seit Jahren Stellung genommen wurde.... Die dokumentarische, reine Photographie ist keine zeitliche Entdeckung, sie hat immer neben der "künstlerischen" bestanden ebenso Geltung gehabt.¹⁶⁹

But Moholy was not suggesting this. He was suggesting that art photography should learn from applied photography to conform to the inherent qualities of the medium. The emphasis on "sachlich" applied photography was commented upon by one reviewer who noted that because the exhibition as a whole focused on *sachlich* photography, which is a return to its true origins of a century earlier, its focus on contemporary scientific and criminological photography is understandable.¹⁷⁰

Not only is a list of most of the exhibited works reconstructable, but in this case we know more about the installation of the works than in the previous shows because there are photographs of both the Stuttgart and Berlin showings. (Figs. 5-13, 5-15) If we look at the Stuttgart installation photograph, we see that Schneidler and Moholy designed the display stands in a modular fashion for maximum flexibility. Moholy certainly controlled the placement of the individual photos, which were arranged in three-tier rows, on panels which are either affixed to the walls, or stand freely in the space, and are easily rearranged, so that he would have been able to vary the visual effects of his arrangements. This flexibility

allowed Moholy to go beyond the standard types of installations we have seen, to do more than merely group like photos with like. Prodest has noted one of Moholy's installation devices:

Moholy schlug einen neuen Weg ein, den Beschauer zu fesseln und auf das geeignete Ausstellungsobjekt hinzuweisen, ihn zur Betrachtung kleiner Einzelbilder zu zwingen: er brachte einzelne, besonders charakteristische Darstellungen in ganz starken Vergrößerungen auf aus den Ausstellungswänden vorspringenden Säulen an, und unmittelbar unter oder neben diesen grossen Bildern die eigentlichen zur Ausstellung gebrachten Aufnahmen.¹⁷¹

But Moholy went further than employing given architectural features and enlargements for emphasis. As we can see from the one installation shot available to us of Raum 1 at the original Stuttgart showing, as well as a view of the equivalent room at the Berlin installation that fall, Moholy embarked on a radical installation strategy in Raum 1 which recapitulated the layouts in *Malerei, Photographie, Film* and of his storyboard for the unrealized film *The Dynamics of the Metropolis* of 1924-25.¹⁷² In effect Raum 1 was a restatement of the visual rhetorical points made in these earlier projects in which he integrated scientific and other applied photographs with art and documentary photographs to produce a new artistic ensemble.

The Berlin installation demonstrates Moholy's integration of various kinds of photographs. Here Moholy combined an historical group from Erich Stenger's collection of Daguerreotypes, a group of art historical pictures (one can just make out a photograph of Leonardo's *Mona Lisa*) and a selection of close-up plant photographs by Karl Blossfeldt, all on the wall at the left. To the right of the Blossfeldt display, at a 90-degree angle to it, are visible parts of what seem to be scientific photographs. On the wall to the right, meanwhile, is a display of *Momentaufnahmen*, including streetscapes taken from high points of view, photographs of animals and

people.¹⁷³ Eleanor Hight calls Moholy to task on this unconventional installation practice:

These photographs by amateurs and professionals, both anonymous and known, were placed side by side without a distinction drawn between which ones were "art" and which were not. Nor was a point made about which ... were documentary, ... made with the intention of recording information or conveying a message of social relevance. In *Malerei, Photographie, Film*, Moholy had no captions at all for some photos, and for others captions that stressed solely formal elements. As a result the photos in his book, as well as those in the Fifo exhibition, were divorced from their original contexts. Despite Moholy's desire to include the work of non-artists, there is a contradiction in the way he displayed the photos as art objects within an exhibition setting. In spite of his social consciousness, he clung to the aesthetic presentation of photography; his own works were not reproduced in periodicals for the masses, but rather in art, architecture and photography journals. And he analyzed his works in aesthetic, formalist terms. In Fifo Moholy was providing a new context and function for photography that conformed to what he called "the new vision."¹⁷⁴

Hight chides Moholy for decontextualizing non-aesthetic photographs, i.e. recontextualizing them in an artistic setting. But he was not interested in de-contextualizing, or in pretending that the applied photographs were meant as art. Rather, he was interested in offering them as didactic visual models for artists. Of course, one of the -- perhaps unintended -- results of Moholy's practice was an "aestheticization" of applied photographs. But he also succeeded in his original intention and contributed to the shift in the aesthetics of art photography towards a sharp, unmanipulated documentary style. Given that Moholy's subtext was the biocentric Monist concept of the unity of the world, rather than decontextualizing them, he was recontextualizing them within the biocentric discourse.

Returning now to the Stuttgart installation photograph, at the right we see a panel with X-ray transparencies from I.G. Farben and the Lette-Verein of an applied nature, the

individual pieces artfully arranged in four sections. One section contains a near-life-size x-ray of a human being, and the others asymmetrical arrangements of three to six x-ray images each. A panel at left contains criminological shots, and the end of the free-standing display stand at left contains what look like four aerial views. Adjacent to this Moholy set up a panel including three of his own photomontages of the mid 20s: *Traum des Mädchenpensionats* of ca. 1925 at top, *Huhn bleibt Huhn*, also of 1925 at centre, and *Pneumatic* of ca. 1923, apparently a poster design for a tire company, at bottom.⁷⁵ *Huhn bleibt Huhn* incorporates a found x-ray of a swan and is an example of how an applied x-ray image can be incorporated into the structure of a bona fide art work. (Fig. 5-16) By placing such an aesthetic usage of a found x-ray photograph across from purely applied x-ray images, Moholy made the point that applied photographs can either be utilized or regarded aesthetically. Also, by placing what is clearly an artwork incorporating an applied photograph, among what are evidently applied photographs, and by locating this display of mostly applied photographs within a show of art photography, Moholy constructed a kind of Chinese box of alternating artistic and non-artistic elements, an interlacement so complex as to effectively blur discursive boundaries. In this sense the whole installation functioned as a signifier for his opposition to the compartmentalization of knowledge. But Moholy also warned against the blurring of boundaries between fields of creative activity; each should stay true to its conditions of production. Applied photos were to be studied because they were the unselfconscious products of imaging technologies. By opening them to formal scrutiny while respecting them as non-art, Moholy succeeded in enriching art without miscontextualizing scientific imagery.

While this installation participated in the general discourse of what we now refer to as photography of the New Vision, itself seen already at the time as part of the *Neue*

Sachlichkeit trend, there was something here that differed from typical *Neue Sachlichkeit* views of the world as beautiful or as ugly, but in any case as familiar or recognizable, and this was the "strangeness" of botanically-inspired close-up nature photography, such as the work of Blossfeldt (also included in this room), and of scientific photography. As Hight has pointed out in *Picturing Modernism*, this is parallel to Schlovsky's notion of "making strange."¹⁷⁶

That Moholy succeeded in making these rhetorical points is confirmed by the (sometimes negative) contemporary critical reaction to Raum 1. Indeed the radicality of Moholy's installation strategy was intuited by reviewers, some of whom called him to task for implying that applied photos could be appreciated for their formal rather than their documentary value. Some, like "Professor Spörl," did not understand: the Frankfurt exhibition showed more scientific photography, the curators value purely documentary photography aesthetically, "Ein Chaos!" he writes.¹⁷⁷ Others, such as Haceel and Mathies-Masuren understood Moholy's intentions better, but disagreed with them. They see art and applied photography as separate realms and protest the usage of the latter as models for the former:

The importance of photography for 'science and technology' is a fact that has been recognized for some time. The exhibition contains valuable examples as proof of this, that do not, however, distinguish it from previous exhibitions.... [He now speaks of criminological photographs:] They should not be seen as anything but functional, and should certainly not lay claim to be seen to be "aids to the development or education [Erziehung] of a photographic culture" as proposed in the text panels.¹⁷⁸

In one negative review of the Stuttgart installation of the show, while discussing the new trends in art photography shown in the exhibition, such as photograms, abstract photos and *Neue Sachlichkeit*, E. Haceel wrote in the next paragraph:

Die in Stuttgart gezeigten Arbeiten aus dem umfangreichen Gebiet der wissenschaftlichen Photographie

bleiben ausser Diskussion. Sie sind Zweckgebilde und haben daher mit Photogrammen und 'neuer Sachlichkeit' keine Berührungspunkte, höchstens hier und da formale. Trotzdem finden wir unter den wissenschaftlichen Arbeiten manches ausdrucksvolle Stück. Doch hätte man derartige Arbeiten nicht erst heute zeigen können. Es handelt sich bei ihnen also kaum um Werke der 'modernen' Photographie.¹⁷⁹

At least one critic, Dr. Ludwig Neundörfer, however, saw the applied photographs as the most interesting images in the show, and bemoaned the fact that such images were not distributed beyond Raum 1, throughout the exhibition.¹⁸⁰ Picking up on the biocentrism inherent to the New Vision, Willy Rietzler of the Deutsche Werkbund emphasized that scientific images were to be appreciated as reminders of the perfect harmony of nature rather than for their formal values.¹⁸¹

This aestheticization of applied photographs subsequently made it possible for imagery produced by amateur photomicrographers employing equipment normally utilized in scientific activity such as telescoping, radiography and photomicrography, to enter the discourse of art photography. While the imposition of Nazi cultural policy drove the avant-garde underground or into exile (as it did Moholy), this new aesthetic of art micrography, art telescoping and art radiography survived Nazism even in Germany, where disguised -- as scientific photography, whose publication in art photographic periodicals such as *Das Deutsche Lichtbild* had been legitimized by virtue of Moholy's writings -- Karl Strüwe was able to publish his art micrographic images in 1937 and 1938. Thus, and this is an important point to make, Moholy did not "appropriate" scientific photography to the discourse of modernist art photography, but rather he made it worthy of attention. This attention was not merely formal, but also treated such images as signifiers of biocentric ideas of world harmony. He did not commodify them as Nierendorf did Karl Blossfeldt's *Musterbilder* and as the Surrealists did the work of Eugène Atget in 1925, for he was not interested in making these images into art.¹⁸² Moholy was

interested in them as signifiers of the unity of the world and as means to extend the complexity, richness, and scope of the senses, to educate a new vision.

Thus New Vision emerges from the interpenetration of the discursive spaces of art, applied, and amateur photography, scientific imaging, biocentric Constructivism and biocentrism. Moholy meant it to promote interdisciplinary understanding while respecting the distinctness of creative methods. The contemporary reception of New Vision, positive and negative, indicates that viewers understood the radicality of Moholy's message.

In these installations, Moholy combined the images in new ways to make points about the locus of aesthetic enjoyment and the boundaries between art and non-art. What the curator of the Itten-Schule exhibition, what Walter Dexel at the Jena Kunstverein, and what Ernst Wilhelm-Kästner at the Museum Folkwang had not done in their exhibitions over the previous year-and-a-half, Moholy now had the chance to do.¹⁸³ As suggested, it was his own book which acted as the principal precedent to the installation of photographs in Raum 1, and not other photographic exhibitions of the 1920s, as has been previously assumed. While exhibitions such as that in Berlin in 1925 and Frankfurt in 1926 did include both scientific and art photography, works of different genres were installed in separate rooms, often in separate wings of the exhibitions halls. While the exhibition at the Itten Schule of 1927 was significant in that it integrated art, architecture, art photography and applied, including scientific photography in one small show, as far as one can tell, they were not installed in an integrated fashion, but rather in separate groupings, as was "Neue Wege der Fotografie," held at the Jena Kunstverein in 1928.

It is safe to assume that a cultural event of this prominence in Germany and Central Europe at a time when photography was the fashion, would have been visited not only by those

interested in photography per se, but by a broad range of arts-related professionals such as painters, writers and musicians, even if it is impossible to document just who saw it. While Stuttgart may seem marginal to artistic centres, it is worthwhile pointing out that France and Switzerland were nearby, that the FIFO was remounted in Berlin later that same year and that the material subsequently toured to Zurich, Zagreb, Vienna, and Danzig [today's Gdansk]. I would hold that this dissemination of scientific imagery contributed to the surge in the production of biomorphic Modernist art starting around 1930 noted by art historians.

3. Kállai from *Technoromantik* to *Bioromantik*

A crucial example of the effect that Moholy's installation in Raum 1 had on art professionals is his -- at this point, former -- friend Ernő Kállai. For Kállai Raum 1 was the site of an epiphanic experience in which the visual analogy between abstract art and scientific photography first became apparent to him. This experience led Kállai to speculate on the reasons for this visual conjunction. The biocentric world view which he had adopted in stages since 1925 led him to the psychobiological conclusion that these analogies were due to the rootedness of human activity in the *Bios*. The trend in artistic production which he saw as evincing this phenomenon -- mostly biomorphic Modernist works -- he termed *Bioromantik*. "Bioromanticism" was, in effect, the first coherent theory of biomorphic Modernist art. As we have seen, in 1931 Kállai proposed, and in 1947 he realized an exhibition juxtaposing the products of scientific self-imaging technologies and abstract art, in order to legitimate the art as an accurate reflection of reality.

a. A Gradual Disillusion

We have seen in Chapters One and Four that during the early 20s Kállai privileged the technological side of what he saw as the nature/technology dialectic, rejecting nature as a model for artistic creativity, distancing himself from the biocentric Constructivism of his friends and colleagues such as László Moholy-Nagy, Lazar El Lissitzky and Mies van der Rohe, and siding instead with the Paris Purists and the *de Stijl* artists on this issue.¹⁸⁴ However, like Moholy, Kállai's familiarity with the Nietzschean, *lebensphilosophisch*, Monist and Neo-Vitalist discourses would have dated from his Hungarian avant-garde days. Indeed, as a teacher interested in *reformpädagogisch* approaches to the teaching of art to children, he would have been aware of aspects of the *Reformbewegung* that Moholy had known of. As with Moholy, it was more than likely this pedagogical concern that brought him into contact with the work of Hans Prinzhorn and his book *Die Bildnerei der Geisteskranken*.¹⁸⁵ As mentioned in Chapter Four, a Monist undertow is discernable in Kállai's "anti-natural" Communist-Constructivist writings of 1922-23. But it was Kállai's engagement with contemporary art and with Prinzhorn's Klagesian biocentric psychology that led him to what he saw as technology's antithesis, to a biocentric view of "nature."

Éva Forgács dates the start of Kállai's disenchantment with technocentric Constructivism to the summer of 1923, with the appearance of "Korrekturát! (a *de Stijl* figyelmébe)."¹⁸⁶ While this text does proffer a "corrective" to a purely aesthetic variant of Constructivism (what he designates as the "Exclusive Constructivism" of, e.g., the artists around *de Stijl*), it does not propose a re-spiritualization of nature or even of the biological ground he assumes in the article, however. Rather, it promotes Leftist social engagement as a corrective measure. While at the end of his article "E-T-I-K-A?" [E-T-H-I-C-S?] Kállai reaffirms the importance of a social-utopian orientation for Constructivism, he does not do

so at the expense of a concern for nature. This orientation, he writes, still "leaves open the question of relations to nature and psychological problems, as anyone's private affairs."¹⁸⁷ And in his article on Wilhelm Lehmbruck published at the end of 1923, he displays this nuanced approach. While criticizing the pathos into which he saw Lehmbruck's art descending towards the end of his life, he nevertheless valorized the ethical intent and its formal realization in the artist's work.¹⁸⁸ Such a valorization, even if equivocal, marks the shift in his thinking from thesis to antithesis.

The nuanced approach he was taking by late 1923 evolved by 1925 into a fundamentally new, antithetical position. In his 1924 treatments of the Hungarian artists József Egry and Aurél Bernáth, Kállai emphasizes their close link with nature, seeing it as a characteristically "pagan Magyar" trait. In the short piece on Bernáth, he articulates for the first time -- and without judgement -- a full-blown biocentric position:

[Bernáths] Vision ist eine ... Erweiterung des Naturgebildes, als Bildes einer Macht die uns Menschen, trotz technischer Allerweltfertigkeit, überlegen bleibt. Wir sind nicht fähig, die Beziehungen erkenntnismässig und praktisch bis ins Letzte und Entscheidende zu beherrschen, die unser Erdennatur in einen Strom kosmischer Gewalten treiben lässt. Der Strom reisst ins Grenzenlose und bleibt ein Schauspiel mythisch-erhabener und geheimnisvoller Naturerscheinungen und Mächte. Diese Erschütterung von dem Geheimnis der Natur ... ist ein romantischer Wiederklang der von Christentum und europäisch-bürgerlich Kulturdrill verschütteten heidnisch-magyarischen Natur-Religiosität.¹⁸⁹

When writing of Moholy-Nagy's Constructivist art Kállai concludes by describing it as a "refreshing view of an as healthy a decentralization of community spirit and communitarian life as is possible."¹⁹⁰

By early 1925 Kállai had developed this anti-doctrinaire position into what was in effect a psychobiological stance, necessitating the rejection of utopian ideology as a directive force of art. In its stead he specified technical ability,

"quality," and a promotion or embodiment of awareness of the dialectical complexity of reality (its "divine" as well as "demonic" sides), as the characteristics of good art.¹⁹¹ "The artistic dictatorship of Constructivism, or any other tendency, just as much as architecture or film or theatre, is an ideological castle-in-the-air, a utopia, a fiction. Opposed to it is the multi-faceted reality of objective and psychological determinants." He questions the ability of the Marxist project to be able to change this. "The duality of intellect and feeling, technology and art, profit-motivated goal-directedness and free impulsiveness, still stands."¹⁹² This psychologically based epistemology was the turning point, at which as Forgács points out, Kállai "gave up political involvement."¹⁹³

For the time being, however, Kállai occupied a critical position analogous to that of biocentric Constructivism with respect to his views on architecture. That this was a fluid, equivocal position is demonstrated by the fact that in 1925, in "Organisation, Natur, Gestaltung," Kállai began to formulate an alternative to a purely technocentric Constructivism's obsession with organization.¹⁹⁴ As the biocentric Constructivists had, in this article Kállai called for a synthesis of the utilitarian and the organic:

Unstreitig haben diese konstruktivistischen Plastiken und Gemälde ... ein beispiellos abgewogenes, schwebendes Gleichmass der Proportionen, eine leuchtende Klarheit im Zusammenspiel aller Teile. Doch sie besitzen nicht das Moment der Spannung zwischen intellektueller Disziplin und triebhaften Ungestüm, zwischen Organisation und Natur. Auch diese Spannung aber gehört zum Wesen technischer Zweckformen ... von denen der Konstruktivismus seine entscheidenden Anregungen empfing. Dieser Mangel erklärt den empfindlichen Rückgang an Vitalität ... den der Konstruktivismus bereits nach wenigen Jahren seines Wirkens erleiden muss, so fruchtbar er auch im übrigen ... noch sein mag. Das System von klar und exakt organisierten, aber abstrakten Spannungen im konstruktivistischen Kunstwerk muss die stoffliche und gegenständliche Fülle des Einmaligen, Bestimmten, Natürlichen in sich aufnehmen und verarbeiten. Gelingt die Synthese, so haben wir eine neue Klassik

der Kunst vor uns, einen Stil, in dessen streng geistiger und Massvoller Haltung sich organisches Wachstum und Erblühen zu stauen vermögen.¹⁹⁵

Occupying a biocentric Constructivist position with respect to architecture, in 1926 Kállai developed his earlier tendency to "vitalize" Constructivism in his critical writing.¹⁹⁶ In an article on Gropius' former employee, the Modernist Hungarian architect Fred Forbáth, Kállai identifies him as working in the tradition of functionalist organic architecture, and he refers to a vital force working through the individual architect, resulting in a period style; what he would later term a "constructive" or "technoid drive."¹⁹⁷

Kállai did not espouse a biocentric Constructivist position in the realm of the fine arts, however. The combination of pessimism and optimism inherent to the position outlined in "Organisation, Natur, Gestaltung," prevented Kállai from espousing the Francéan/Uexküllian variant of naively optimistic functionalist biocentrism alone. In his writings on the visual arts, it was the *kulturpessimistisch*, Klagesian/Prinzhornian variant of biocentrism cognizant of a "demonic" side to "nature" and critical of "unsere technomaniakischen, kapitalistischen Zeit," which Kállai tended towards.¹⁹⁸

The earliest manifestation of a clearly articulated Klagesian biocentric critical perspective combined with Kállai's renewed interest in artistic form and quality is his 1927 article on the German sculptor Ewald Mataré, Josef Beuys' future professor. This marks the start of his valorization of a "synthetic" art which culminated in his definition of *Bioromantik* as a trend. "Die Natur ist Matarés Alpha und Omega," writes Kállai approvingly, "er kann selbst das obligate abstrakte Baugesetz entbehren und bleibt trotzdem streng und sachlich bis zur letzten Geschliffenheit der Form."¹⁹⁹ He continues the development of this line of thought in his review of the Itten Schule exhibition of February 1928 in which Kállai observed, "Die Plastik beschränkt sich auf einige

Arbeiten von Ewald Mataré. Eine glückliche Wahl allerdings, denn diese harmonischen Köpfe und Tiere gehören zu den sehr wenigen Beispielen moderner Holzplastik, die ein vollrundes Volumen von sparsamster, beinahe abstrakter Formung mit tiefstem Naturgefühl vereinen."²⁰⁰ Of Mataré's wooden statue of a cow he wrote in 1927 that:

Er hat feines Empfinden für die Verslossenheit selbst des Haustieres in einer Welt, die wir nur erahnen können als tief beharrungsvolles Dasein von triebhafter innerster Notwendigkeit und ewig gleichmässigen Ablauf. Mataré folgt mit hingebungsvoller Bewunderung. Beobachtet tage- und wochenlang, um die ganze Erscheinung des Tieres in einem letzten plastischen Vollklang regungsloser Statik zu erfassen.²⁰¹

It is with a discussion very close to this one of Franz Marc's painting *Der Stier*, that Kállai would open his article "Bioromantik" in 1932. (Fig. 3-1) Indeed it is this expression of a link between compact, rounded forms and a feeling for nature, that constitutes his bioromantic conception in its earliest form, before his discovery of the naturamorphic analogy, and it appeared just weeks before he was hired to the Bauhaus by Gropius' successor Hannes Meyer, early in April 1928.

b. Kállai at The Hannes Meyer Bauhaus

A change in the collective feeling of universality is first visible in art and science because they are the freest human activities and least connected with the social associations of an era. When man changes his fundamental attitude towards life, this new mentality reveals itself primarily in artistic and scientific creations. (Ortega y Gasset)²⁰²

After his resignation in 1928, Walter Gropius chose the radically biologicistic Swiss architect Hannes Meyer as his successor at the Bauhaus. Meyer in turn hired Kállai to be the editor of *bauhaus* and the school's publicist.²⁰³ (Fig. 5-17) That Kállai still espoused a biocentric Constructivist posi-

tion in the realm of architecture and city planning is demonstrated by the fact that he accepted the job offer. We have seen in Chapter Four that Meyer drew on the English Garden City movement -- particularly on the Anarchist biocentric urban theory of the Scottish writer Patrick Geddes -- and on the functionalist biocentrism of Raoul Francé, as transmitted by El Lissitzky to the Swiss avant-garde architectural circle around the journal *ABC*. But there were other reasons Kállai would have been attracted to Meyer's Bauhaus. First, Kállai admired him. In a letter to Naum Gabo he wrote that "Hannes Meyer ist ein Mensch, vor dem ich tiefsten Respekt habe. Sein Wissen ist einfach phantastisch, und dabei hat er eine wirklich unverbaute, warme Menschlichkeit."²⁰⁴ Also, like Kállai, Meyer was keenly interested in the biocentric psychological theorizing of Prinzhorn and Klages.

Around the time of his appointment to the Bauhaus faculty early in 1927, the technological utopianism of Meyer's 1926 manifesto "Die neue Welt" tempered as his belief in an organic Socialist utopia based on biological determinism and Francéan functionalism intensified.²⁰⁵ Meyer published two articles in the Kállai-produced *bauhaus*, of which he was the publisher and editor-in-chief during his directorship of the school. Both display a continuation of the thoroughly Francéan conception of architecture he had adopted in Switzerland. In Meyer's "bauen," which appeared in the June 1928 issue of *bauhaus*, soon after he assumed this position, Meyer declared that

all life is function and therefore unartistic. ... building is a biological process. building is not an aesthetic process. designed in an elementary way, the new dwelling house becomes not merely a machine for living in but also a biological apparatus serving mental and bodily needs ... we organize ... constructional elements according to economic rules into a constructive unity. thus the only possible form arises automatically, determined by life... this functional-biological conception of building as forming life processes leads logically to pure construction... *pure construction is the basis and marker of the new world of forms.*

Meyer concludes the article with the thoroughly anti-aesthetic slogan "building is merely organization: social, technical, economic, psychical organization." As long as Meyer limited his discussion to the realm of building, this totalizing functionalism harmonized with Kállai's views. However, inasmuch as Meyer began to apply it to other realms, or rather, to deny the importance of the fine arts, and after -- in 1929, with a closer reading of Prinzhorn -- Kállai began to apply Prinzhorn's system to architecture -- the tensions between the two began to mount.

Nevertheless they did agree on the fundamental biological rootedness of humanity and our activity. Indeed despite Gropius', Moholy's, Bayer's and Breuer's resignations, the more Klagesian biocentric figures such as Schlemmer, Klee and Kandinsky -- though wary -- remained, and Schlemmer's shifts in attitude over time may reflect those of his colleagues.²⁰⁶ As Paul Klee wrote in the first issue of *bauhaus* published under Meyer -- invoking the Klagesian dichotomy between *Geist* and *Seele* -- "Wir konstruieren und konstruieren und doch ist Intuition noch eine gute Sache," a synthetic position identical to Kállai's.²⁰⁷ Kállai found his place in the company of the Schlemmers, with whom he lived after his arrival, in whose company he was photographed by Josef Albers, and with whose resignation from the school his own coincided.²⁰⁸

Meyer is usually seen to be a materialist Marxist tout court. And indeed, in his article "bauhaus und gesellschaft" published in the January 1929 issue of *bauhaus*, Meyer writes that "as designers our activity is socially determined...." However, rather than a Marxist dialectic, underlying this manifesto is an epistemology that is undialectical, indeed totalizingly biologicistic. The ethics emerging from this biologism sees social harmony in Francéan terms as resulting from the imitation of harmony and optimal balance in nature:

all life is a striving for harmony. growth is the striving for a harmonious consumption of oxygen +

carbon + sugar + starch + protein. work is the search for a harmonious form of existence. ... the goal of our bauhaus activity is the pulling together of all life-forming energies to effect a harmonious development of our society. ... the new architectural model is an existential epistemology, as a model of design it is a lofty song of harmonics. as a social model it is a strategy of balance [ausgleich]. ... its design means are -- consciously applied -- the results of biological research. since this architectural model is so close to life, its theses are in constant flux; since its realization is situated in life, its forms are as abundant as those of life itself are.²⁰⁹

Meyer could not have made his Francéan functionalist biologism more apparent. His goals are -- like Francé's -- social harmony, and the model on which to base such harmony is -- again like Francé's -- biological. Unlike Francé, who leaned to the Right, however, Meyer was a committed Leftist, another instance of the political variability of biocentrism discussed in Chapter Two. Also unlike Francé, but like Moholy, Meyer lacked *kosmische Einheitsgefühl*; he lacked *Vitalmystik*, and this distinguished him from other Bauhaus biocentrics such as Kállai, Klee, Kandinsky and Schlemmer, and no doubt contributed to the split between Meyer and them.

During his first months at the Bauhaus, Kállai celebrated and promoted Meyer's *sachlich*, utilitarian, social organicism as a necessary element of the world's dialectic as he saw it. This celebration was articulated not only in biocentric functionalist terms, however -- and this highlighted their differences -- but in clearly *vitalmystisch* ones as well. Thus, in 1928 Kállai wrote that "Hannes Meyer sees the image of a multi-layered, yet unified, ensouled, collective organism before himself."²¹⁰

Kállai was not the only one to understand Meyer's social project as based on an Organicist, Holist view of the world. Stefan Kraus points out that "Meyer wollte Funktionalismus nicht als Ausdruck formaler Prinzipien verstehen, sondern als Ergebnis einer Auseinandersetzung mit den Strukturen des

Lebens."²¹¹ This structure of life was to be understood through a systematic program of study outlined already in "Die neue Welt" and developed in subsequent texts. Meyer propounded a holistic and complex strategy of study -- what we would now refer to as an ecological approach -- involving psychology, philosophy, biology, physics, sociology and the application of these to the teaching and understanding of architecture.²¹² The realization of this approach at the Bauhaus made for an exceptionally lively intellectual atmosphere and gave Kállai the opportunity to immerse himself in the debates around biological determinism, psychobiology, and "free" art versus organization and efficiency-driven activity then raging in Weimar Germany. Thus, while there, the development of Kállai's biocentric worldview was nurtured.

Meyer sought to realize this program through two major means. First, he asked the three full-time Bauhaus masters, Oskar Schlemmer, Paul Klee and Wassily Kandinsky (all of who, we have seen in Chapter Three, were biocentrically minded), to teach one semester each of a three-semester basic course. Schlemmer was assigned the third semester, the subject of which was to be "man" or "mankind in the world."²¹³ Second, Meyer undertook an ambitious lecture program.

That Meyer meant Schlemmer's course to educate the students in his own complex approach is indicated by Schlemmer's trepidation expressed in a letter to Baumeister that his "duties [under Meyer] are to include publishing, public relations, and unfortunately also pedagogy-demagogy."²¹⁴ Schlemmer's initial concerns seem not to have been justified. Shortly after he first began teaching the course, in May of 1928, it still seemed open-ended, and so it was bound to reflect his own brand of biocentrism. Schlemmer was teaching

areas which may not be absolutely essential but which fascinate me: internal anatomy, physiology, and especially psychology, not to forget philosophy in general. I have to dig all this out for myself; some of it is hard to get at, due to the complexity of the various branches.

I am curious to see where it leads, what picture of the world emerges by the end of the semester, and whether anything both personal and universal can be extracted from the contradictory opinions of the scientists and philosophers.²¹⁵

Indeed Schlemmer's organic slant within his avowedly synthetic ideal discussed in Chapter Four is attested to by his diary entry of 26 March 1928, around the time he was asked to start planning his new course:

Manet-metaphor: oyster, asparagus, peach. Léger-metaphor: clamp. One cannot ask the former to be the latter, and vice-versa. But one can say that although the oyster, the asparagus, and the peach may not be "more beautiful," they are eternal. The clamp, though made of iron, will "pass," made obsolete by a newer invention, but the peach will remain, demonstrating each year anew the law of organic growth.²¹⁶

The concept of this course, along with Schlemmer's famous "Schematic Summary of the Subject 'Man'," was published in the first Meyer/Kállai issue of *bauhaus*, which appeared on 1 July 1928.²¹⁷ (Fig. 5-18) "Für das 'neue leben'," wrote Schlemmer

ist die kenntnis des menschen als kosmisches wesen unerlässlich. seine existenzbedingungen, seine be-
ziehungen zur natürlichen und künstlichen welt, sein
mechanismus und organismus, seine materielle, spiri-
tuelle und intellektuelle erscheinungsform... es
gliedert sich ... dem naturwissenschaftlichen aufbau
und der transzendenten ideenwelt in drei teile, den
formalen, den biologischen und den filosofischen
teil. im unterricht laufen die drei teile wechsel-
weise nebeneinander, um sich zuletzt zur totalität
des begriffes mensch zu vereinen.²¹⁸

Schlemmer based the course in the Monist biocentric philosophy of Ricarda Huch, an important figure in Klages' and George's "Kosmische Runde" in fin-de-siècle Munich, and her dictum that "Der Kosmos ist eine Dreieinheit aus Geist, Natur und Seele."²¹⁹

Like Meyer's Bauhaus lecture series, the curriculum included instruction in the natural sciences, philosophy and psychology, Schlemmer's readings for which reflect the larger biocentric discourse of the time. The Haeckelian Monistic,

i.e. biocentric nature of Schlemmer's position is underlined by his plans to teach "heredity, racial theory, reproductive biology, ethics and so on" in his course, a list of topics and concerns typical of the contemporary biocentric discourse.²²⁰ The philosophical instruction ("*naturphilosophisch*" as Kuchling points out) focused on the history of the Monistic versus the Dualistic conceptions of nature.²²¹ Schlemmer's teaching of psychology also articulated the Monist/Dualist controversy in the field, coming out squarely on the Monist side, as indicated by the fact that half of the psychology reading list consisted of Klages' works and those of his avowed master Carl Gustav Carus.²²² Kuchling characterizes this curriculum accurately. For Schlemmer

der Mensch ... ist eine Ganzheit für sich und zugleich Teil einer grösseren Ganzheit, des Kosmos, der als universales Bezugssystem gedacht werden kann. Der Begriff 'Kosmos' birgt den Gedanken einer universalen Ordnung in sich.... Um diese Weltschau ... den Schülern begreiflich zu machen, baute Schlemmer d[ie] ... "Lehre vom Menschen" aus.... Die Wissenschaften sollten ... den Menschen als "kosmisches Wesen" ausweisen. Die Naturwissenschaften sollten zeigen, dass der Mensch integrierender Bestandteil der Natur ist. Die philosophischen Lehren sind ein Versuch ... alles Existierende als eine Einheit zu begreifen. Die Psychologie sollte einen Einblick in die seelische Struktur des Menschen und in sein Verhalten zur Welt geben.²²³

Though without employing the terms, Kuchling describes Schlemmer's program as Holist, Organicist and Monist, that is, as a biocentric one.

The lecture series -- assembled by Meyer with Kállai's assistance -- reflected Meyer's interests and -- as the pages of *bauhaus* did -- echoed the tensions between Kállai and Meyer.²²⁴ Leaving the lectures by artists, critics, filmmakers and architects aside, the non-aesthetic component of the series opened with a series of talks on the subject of the functionalist organization of life and work. On 29 November 1928 the physician Rudolf Neubert spoke on "Lebendige und

technische Organisation."²²⁵ This technical lecture on body and health-centred design was followed in February 1929 by Hanns Riedel's talks on the related theme of "organisation der arbeit."²²⁶ Still on this subject, on June 6 the biologicistic and anti-anthropocentric agricultural labour theorist Konrad von Meyenburg, one of whose promoters was Raoul Francé, spoke on the "Grundlagen der Arbeit und Arbeitsforschung".²²⁷

But it was not only Francéan functionalism that Meyer espoused within the biocentric discourse. Probably through a reading of Prinzhorn's 1927 book *Leib-Seele-Einheit. Ein Kernproblem der neuen Psychologie*, Meyer became interested in Prinzhorn's Klagesian biocentric psychology and the intention to invite Prinzhorn to the Bauhaus was announced in the 1 October 1928 issue of *bauhaus* already.²²⁸ Possibly encouraged by Meyer to publicize the upcoming lecture, Kállai reviewed *Leib-Seele-Einheit* in his article "Bauen und leben," which appeared in the following, 1 January 1929 issue of *bauhaus*. This proved to be a crucial encounter for Kállai, and it contributed to his eventual split with Meyer.

Though Prinzhorn was not new to Kállai (he had reviewed *Die Bildnerei der Geisteskranken* in 1923), it was through a close reading of this book that Prinzhorn and his thoroughly Klagesian biocentrism came to exercise a profound effect on Kállai's view of architecture.²²⁹ If Meyer's enthusiasm encouraged Kállai to review Prinzhorn's book, Kállai turned his understanding of the book back on Meyer's architectural instrumentalism. Kállai opens "bauen und leben" with an exposition of Prinzhorn's thesis:

hans prinzhorn spricht in seinem ausgezeichneten buch "leib-seele-einheit" von der notwendigen vollendung des gerüsts für ein weltbild, das "die erlösung vom alldruck des abendländischen intellektualismus böte". er gebraucht den begriff des "bewusstlos bildenden lebens" und behauptet mit klages, dass "alle echten lebensvorgänge ihrem wesen nach unbewusst, zweckfrei, zwangsläufig, in sich geschlossen seien. er sieht den menschlichen geist in feindlicher spannung zu solchen lebensvorgängen. "alle

verzerrungen des daseins aus ressentiment, aus falscher vergeistigung, aus übermass von bewusstem zweckdenken, aus schließem moralischen zwang, aus willensüberspannung in mächtiger oder selbstquälischer askese -- kurzum alle schwächungen des lebens von unschuld und fülle zu schlechtem gewissen und kargheit" sind auswirkungen jener grossen gegenmacht, des geistes, der uns in die seit der französischen revolution währende kultur- und menscheitskrise gestossen hat.²³⁰

Kállai is here referring to Prinzhorn's articulation of Klages' ideas which would soon receive monumental expression as Klages' *Der Geist als Widersacher der Seele*. Kállai, furthermore -- and this is crucial -- accepts Prinzhorn's call for a new *Lebenslehre* (a term also employed by Francé), which will lead people to a *Weltsicherheit* (a sense of being secure in the world), a model for living which, and he again quotes Prinzhorn, would be "'im einklang mit den grossen rhythmen des naturlaufs und mit allem lebenden gebilde'": "prinzhorns forderung nach einer neuen lebenslehre ergibt sich aus unbedingt stichhaltigen, wesentlichen erkenntnissen unseres lebens."²³¹

Developing his earlier biocentric Constructivist writings on architecture, Kállai goes on to examine the implications this *kulturpessimistisch* Klagesian biocentrism had for a purely functionalist Francéan-Meyerian understanding of the new architecture. Accordingly he issued the warning that even the functionalist architecture he supports is subject to the *geistig* transgressions against and blindness to *Leben* outlined by Prinzhorn, that in its practice it should take into consideration the deep, unpredictable, nature-rootedness of human life: "ob luxushäuser im sinne le corbusiers oder volkswohnungen im sinne ernst mays, ob traditionalistisch oder modernistisch: man baut im sich praktische fiktionen der ordnung und übersichtlichkeit vor, während das leben in unberechenbaren wucherungen gegen unsere konstruktionen antreibt."²³²

In mid-March Prinzhorn gave his lectures. On the 15th he spoke on "Leib-Seele-Einheit," the Monistic and biocentric

tradition of psychology, and the next day he lay the "Grundlagen der neuen Persönlichkeits-psychologie" in his presentation.²³³ After hearing these talks Meyer could hardly contain his enthusiasm. In an outline prepared a month afterwards for a lecture on the Bauhaus to be given in Vienna and Basel that same year, Meyer wrote of the importance of psychology for teaching architecture: "Die neue baulehre ... muss *seelenkunde* vermitteln, und auf der grundlage der leib - seele - einheit (carus - nietzsche - klages - prinzhorn - adler - freud), psychologische unterlage zur kenntnis vorbauen"²³⁴ It was biologicistic psychology in general, and a Klagesian biocentric variant of biologicistic psychology in specific, that Meyer was promoting.²³⁵

In "Das Bauen und die Kunst," the follow-up article to "bauen und leben," Kállai was also enthusiastic concerning Prinzhorn's thought, but less so with respect to Meyer's particular understanding of it, even concerning architecture. Thus, while Kállai explored the implications Klages' and Prinzhorn's biocentric critique of *Geist* had for painting and sculpture, he also commented on the futility of rational planning in the face of universal life -- an implicit critique of the architectural and social strategies Meyer was (and Kállai was supposed to be) promoting. Thus it is not surprising that this article appeared in Kállai's independent journal, *Der Kunstnarr*, whose only issue appeared in April 1929, rather than in *bauhaus*.

It was in this article that the ideas Kállai had been developing since 1925 in "Organisation, Natur, Gestaltung," in his writings on Mataré, and in "bauen und leben," coalesced into an expression of his *Bioromantik* conception of art. As an indication of their importance to him, this text repeats passages from *Leib-Seele-Einheit* he had quoted already in "bauen und leben":

Malerei und Plastik ... [können] aus reichstem Miterleben aller realen Zwangsmomente erfolgen und die

Kunst dennoch zu den Quellen der inneren Freiheit führen. Zur Totalität ohne Verlust einer tiefsten Mitte, zur geheimen Fühlung mit dem kreatürlich Letzten in uns und in der Natur. " Alle echten Lebensvorgänge sind ihrem Wesen nach unbewusst, zweckfrei, zwangsläufig in sich geschlossen" (Prinzhorn) -- alle echten Lebensvorgänge sind Ausdruck der "Leib-Seele-Einheit." Jede echte Kunst ist solchen Lebensvorgängen entwachsen, steht "im Einklang mit den grossen Rythmen des Naturlaufs und mit allem lebenden Gebilde." Diesen Einklang zu gestalten, die Quellen des Lebens durch seine Vermittlung in uns bewusst werden zu lassen; das ist der Sinn der Kunst.²³⁶

To an even more radical extent than in his writing on Mataré, Kállai passed over from technocentrism to biocentrism; to the promotion of art the way Francé conceived of it, i.e. as an activity which reminded us of our essential groundedness in the rhythms of Life and Nature.²³⁷ That Kállai was anti-Nazi, while Francé and Prinzhorn later associated themselves with Nazism, that Kállai's aesthetic was determinedly Modernist, while Francé's was conservative, did not alter the basic identity of their views on the role of art.

Prinzhorn's and Klages' books also would have informed Kállai of psychological and scientific discourses which subsequently made their appearance in his writings, and which informed his biocentric position. Thus, through Prinzhorn's writings and lectures Kállai could also have become aware of the related psychology of Carl Gustav Jung, whose concepts of the "collective unconscious" and of the "shadow" (the latter perhaps first used by Kállai in conjunction with a critique of Moholy-Nagy's art in "Das Bauen und die Kunst"), affected the development of his idea of the "demonic."²³⁸ Klages' and Prinzhorn's biocentrism also drew on contemporary science to justify its position. In *Leib-Seele-Einheit* Prinzhorn dealt in detail with the latest research results in biology and the natural sciences, which he saw as supporting the Monism of body and soul.²³⁹ Thus, Prinzhorn noted important developments in medicine and the natural sciences, especially physi-

ology, *Biologie der Person*, endocrinology, and genetics made since the turn of the century which indicated the grounding of the psyche in the physical and vice-versa, and this must have acted as an incentive to Kállai to start to follow these fields in the press himself.²⁴⁰ Indeed, in conjunction with the expression of his disillusion with a purely functionalist architecture and with politics in general in "Das Bauen und die Kunst," echoing the Spanish Vitalist philosopher Ortega y Gasset, Kállai pinpointed art and science as fields of activity where an "inner freedom," and hence progress, was still possible: "Diese Disziplinen reichen trotz ihres Missbrauchs durch wirtschaftliche, politische und soziale Machtfaktoren in jene Sphäre rein geistiger und seelischer Wesensschau, die eine idealistische Gestaltung nicht nur möglich, sondern auch notwendig erscheinen lasst."

As the crisis among the faculty over Meyer's leadership deepened after the Prinzhorn lectures, Meyer broadened the base of the lecture program. Around the time that Schlemmer and Kállai resigned, he embarked on a set of lecture series to be given by members of the "Verein Ernst Mach," the "Viennese School" of logical positivism: Herbert Feigl, Rudolf Carnap, and Otto Neurath. The sociologist and long-standing Bauhaus supporter Otto Neurath initiated this series with a lecture on 27 May 1929 concerning the public presentation of statistics as social indicators, in his lecture "Bildstatistik und Gegenwart."²⁴¹ Carnap and Feigl, like Prinzhorn, addressed more philosophical issues. Indeed some of their topics seem to have been chosen as challenges to the types of views presented by Prinzhorn. The philosopher of science Feigl came for a week in July. On the 3rd he presented his "Wissenschaftlich Weltauffassung," one which he would have opposed to the biocentric position of Prinzhorn even though Prinzhorn's was also based in contemporary science. In his lectures of the 5th ("Naturgesetz und Willensfreiheit") and the 7th ("Leib und Seele"), Feigl addressed important issues common to Monist biocentrism

and Monist logical positivism (his "mind-body Monism"²⁴²), namely the question of free will within a context of biological determinism, and of the body-soul problem within a scientific and materialist Monism. But Feigl placed an emphasis on the new physics and mathematics of Albert Einstein and Hermann Minkowski, lecturing on "Physikalische Theorien und Wirklichkeit" (4.7.29), "Zufall und Gesetz" (6.7.29), and "Raum und Zeit" (8.7.29).²⁴³ In the series of lectures Carnap gave in October, he also addressed Minkowski's time-space continuum in "Die vierdimensionale Welt der modernen Physik" (18.10.29). Carnap, furthermore, offered introductions to what have since become known as essential elements of Logical Positivism, "Der logische Aufbau der Welt" (17.10.29), and "Der Missbrauch der Sprache" (19.10.29). Finally, he spoke to the question of the relation between science and society, a central concern of the Mach Society, in "Wissenschaft und Leben" (15.10.29) and "Aufgabe und Gehalt der Wissenschaft" (16.10.29).²⁴⁴

As Galison has pointed out, Rudolf Carnap's lecture series in October 1929 landed the philosopher right in the centre of the debate between Meyer's radical anti-aesthetic functionalism, and other Bauhaus faculty members' -- including Kállai's -- defence of the aesthetic realm as a means of expressing *Leben* or, as Klee expressed it, "intuition." In fact it may have been the heightened tensions around Carnap's lecture series in mid October that finally induced Kállai to leave that month. It was not long after Karel Teige's replacement of Kállai and his departure from the Bauhaus, that the intrigues against Meyer escalated, and partly due to Kandinsky's influence, he was forced to resign as director the following summer.²⁴⁵

While their radically anti-metaphysical -- as Galison terms it "right wing" -- would have opposed the *de facto* metaphysical aspects of both Francéan and Klagesian biocentrism, as their name -- "Verein Ernst Mach" -- indicates, the Viennese logical positivists shared with biocentrism common

roots in the turn-of-the-century *Monistenbund*.²⁴⁶ And Meyer continued to be concerned with those aspects of holistic and Klagesian psychology which did not contradict his radical functionalism. He extended invitations to two prominent Gestalt psychologists from Leipzig, and as a consequence Karlfried Count von Dürckheim spoke on "Gestalt Psychologie" on 6 June 1930, and his mentor, the holist "psychologist of vision," Felix Krüger, was invited to lecture on "Seelische Strukturen," scheduled for 22 October 1930.²⁴⁷ While a Dr. Rudert was invited to speak 2 October on "Charakterologie" (a field in which Klages was highly influential) Meyer had also scheduled a course to be given by Dürckheim on "Psychologische Grundlehre" for the winter of 1930-31. This finally took place during the summer of 1931, after Mies had taken over as director, and included a talk on Klages' *Der Geist als Widersacher der Seele*.²⁴⁸ The lectures were normally followed by discussions which sometimes went on "half the night."²⁴⁹

Given this array of speakers, one might qualify Peter Galison's statement that "the logical positivists were more prominent as visitors to the Dessau Bauhaus than members of any other single group outside art and architecture."²⁵⁰ If one counts Prinzhorn, von Meyenburg, the Gestalt psychologists Krüger and von Dürckheim as biocentric, and keeping in mind Moholy-Nagy's teaching of Francé, Friedrich Ebeling's Francé-inspired activities, and Prinzhorn's efforts for the Bauhaus under his old friend Mies van der Rohe's direction in 1932-33, it would be more accurate to speak of a balance between biocentric and "logical positivist" ideas at the Dessau Bauhaus. Looking at the entire history of the Bauhaus -- even after Itten's departure -- with Driesch's, Ostwald's, and Prinzhorn's lectures in mind, and with the strong influence of the ideas of Francé and Klages, it was biocentrism rather than Logical Positivism that was the single most powerful outside ideological presence at the Bauhaus.²⁵¹

The articulation, elaboration, and application of Kál-

lai's Klagesian biocentrism to the realms of architecture and art led to a break with Meyer. While both were biologicistic, Meyer's anti-metaphysical and doctrinaire optimism and Kállai's open, pragmatic, and more pessimistic position were bound to lead to disagreement. It may have been this, combined with Meyer's anti-aestheticism, that engendered the final rift between the two. It was not first and foremost ideology, but rather Meyer's willingness to sacrifice art to ideology, which finally drove them apart, and Kállai -- like Schlemmer -- away from Meyer's Bauhaus.

Their conflict first received public expression in articles published in the 1 January 1929 issue of *bauhaus*. In "wir leben nicht um zu wohnen" Kállai warns against an overly naive and optimistic view of what the "neues Bauen" can do to solve the housing crisis, while, as mentioned, "bauen und leben" criticized this new architecture in the light of Prinzhorn's concept of body-soul-unity, despite Meyer's enthusiastic and poetic presentation of its ecological version in his "bauhaus und gesellschaft." In "goldene ketten -- eiserne ketten," meanwhile, Kállai attacked the submission of art to purely economic ends in capitalist countries and political uses in the Soviet Union. He ends the article with the ironic reformulation of Marx's slogan from the "Communist Manifesto": "Kitsch-makers of the world, unite!"²⁵² This implicit (rather than explicit) controversy between the publisher and the editor of *bauhaus* took on a new dimension with the publication of Kállai's "Das Bauen und die Kunst" in which he gives up hope on Gropius' "new unity" of technology and art, and petulantly concludes that "Das neue Bauen und die Kunst müssen notwendigerweise getrennte Wege gehen" despite the fact that it was he who brought the Klagesian critical apparatus he had been applying to the fine arts to bear on architecture. While recognizing that Meyer was the one who had set up separate painting classes at the Bauhaus (under Kandinsky and Klee), Kállai criticized the essentially negative attitude Meyer's

radical anti-aestheticism represented towards the fine arts at this time.²⁵³ Though -- like Prinzhorn's and Klages' biocentrism, Meyer's biologism recognized the rootedness of humans in nature -- like Francé -- it assumed that we could learn from nature and do something about improving our lives. Kállai's position, like Klages', came to be less optimistic.

Given that Meyer had hired Kállai to be the Bauhaus' publicist rather than its critic, it is not surprising that he would have been upset at Kállai's anti-ideological and pro-art polemicizing in *bauhaus*. The very fact that Kállai was championing the work of the student Fritz Kuhr, who had publicly opposed Meyer's replacement of Gropius at a memorable Bauhaus dance on February 4 of 1928, was a sign of the rift between the two.²⁵⁴ Kállai defended his critical attitude on the pages of the July-September 1929 issue of *bauhaus* in "sie wundern sich," but by the time this issue had appeared on 15 July, he had resigned from his position, and he refrained from writing for the last October-December issue he nevertheless dutifully edited. The fact that this last Kállai-edited issue was devoted to the work of Oskar Schlemmer, who -- as everyone knew -- left the Bauhaus because of his disapproval of Meyer's ideologically-driven leadership, renders it a kind of silent protest on Kállai's part.

Their common background in International Constructivism and their interest in biocentrism, had initially drawn Meyer to Kállai, but basic differences in attitude eventually drove them apart. While sharing an interest in Prinzhorn's philosophy and biocentrism in general, Kállai and Meyer integrated these ideas into their respective world views in radically different ways. Meyer saw the ideas of Prinzhorn and Klages as contributing to the development of a Monistic "biological" functionalism informed by the teachings of von Meyenburg and the logical positivists. Their ideas exercised quite a different influence on Kállai, who combined the ideas of Klages and Prinzhorn with those of Jung and, as we shall see, Edgar

Dacqué's concept of the "demonic," in developing his more pessimistic biocentric world view. Meyer's understanding of Prinzhorn and biocentrism was largely instrumental -- to be used in the teaching and practice of architecture and urban planning -- while Kállai's was intuitive, intellectual and to be used for the understanding of an art which Meyer rejected. While Meyer's biocentrism led him to a biological determinism which eventually resulted in a rejection of the fine arts, Kállai employed biocentrism in understanding and explaining the visionary and "abstract" nature of the contemporary avant-garde. While Meyer was a somewhat naive optimist and a Communist who was able to remain a Stalinist throughout his life, even after his experiences in the Soviet Union during the 30s and the Hitler-Stalin Pact, Kállai -- no friend of Capitalism himself -- was a pessimistic biocentric Leftist who smelled a rat in Moscow as early as 1928, and was able to integrate such a perception into his thinking through his recognition of the "demonic" being as much a part of the organic whole as is the "good."²⁵⁵ While Kállai emphasized the German Romantic heritage of Klages' biocentrism and Prinzhorn's Monistic "Leib-Seele-Einheit" -- the identity of the spirit of humanity and the spirit of nature -- for Meyer it was a biocentric variant of a materialist philosophy he was able to harmonize with his Marxism. These were the deeper grounds of the conflict between the two, and -- like the divisions in the Bauhaus discussed in Chapter Three, they reflect the division within the biocentric discourse itself: between the functionalist biologicistic approach of Francé and von Uexküll on the one hand, and the pessimistic biocentrism of Klages and Prinzhorn on the other, the same grounds that had led to the split between Kállai and his old friend Moholy-Nagy.²⁵⁶

c. Kállai and the Naturamorphic Analogy

i. Blossfeldt / Benjamin

Around the time of his resignation from the Bauhaus in early July 1929, most of the elements of Kállai's conception of *Bioromantik* were in place. However, though Kállai had by this time recognized the power of scientific self-imaging and of *Neue Sachlichkeit* close-up nature photography, he had not yet noted the naturamorphic analogy. An important role in preparing him for this realization was played by Kállai's encounter with the work of the applied artist and pattern-book illustrator Blossfeldt.

As Kállai does not seem to have seen the 1925 exhibition held at the Galerie Nierendorf in Berlin, it was in 1928 that he become acquainted with Blossfeldt's photography.²⁵⁷ In the January 1929 issue of *bauhaus* Kállai wrote one of the earliest reviews of Blossfeldt's book of 120 close-up photographs of plants, *Urformen der Kunst*. Then, from 11 to 16 June 1929, Kállai would have seen Blossfeldt's photographs in the original, at "Pflanzenfotos: Urformen der Kunst," their exhibition held at the Dessau Bauhaus.²⁵⁸ Echoing the ideas expressed in his article "Dämonie der Satire" Kállai wrote:

"die kunst liegt in der natur, wer sie holt, der hat sie": dieses wort hat blossomfeldt mit bilddokumenten von überwältigender schönheit belegt.... [D]er gesamte "magische realismus" kann sich vor der stahlernen präzision und mitunter wahrhaft dämonischen ausdrucks-gewalt dieser naturfotos ins letzte loch verkriechen.²⁵⁹

Blossfeldt's work stunned Kállai, and -- despite Kállai's predilection for painting as a medium of intellectual and spiritual expression -- reconfirmed his opinion that such photography was far superior to *Neue Sachlichkeit* painting, the "magische realismus" he referred to. This only heightened his efforts to find painting and sculpture that could do what Blossfeldt's photographs could. He found it in the work of artists such as Ewald Mataré, Paul Klee, Georg Muche, and the

Bauhaus students Fritz Kuhr and Fritz Winter.

Also important for the development of his conception of *Bioromantik* would have been Kállai's exposure to the critical literature on Blossfeldt's work. Karl Nierendorf's introduction to *Urformen der Kunst* framed it in biocentric terms. Nierendorf assembled reflections on, *inter alia*, the growing interest among young people in nature, the new organic architecture, the new worlds which the microscope and telescope were revealing, and the unity of humanity and nature shown in Blossfeldt's photographs:

Far more enchanting ... is the final realization of the hidden powers of Creation -- in the ebb and flow of which we, as creatures of Nature, are inextricably caught. The work produced by successive generations as witness to their existence, and the most transient and delicate of natural forms, each must conform to the natural laws which fashion everything.²⁶⁰

Most important of all was Walter Benjamin's review of *Urformen der Kunst*, which Kállai will have read, as it is likely that he was a regular reader of a Berlin intellectual journal as important as *Die Literarische Welt*.²⁶¹ Benjamin produced a text marked by a Francéan conception of the *Grundformen* of nature, one which remarked upon the naturamorphic analogy, linking this analogy to Moholy-Nagy's New Vision and embedding it within a biocentric matrix:

[Blossfeldt] has proven how right Moholy-Nagy, the pioneer of the new photography was, when he says 'Die Grenzen der Photographie sind nicht abzusehen...' Whether we accelerate the growth of a plant through time-lapse motion photography or enlarge its image forty-fold, myriad images swoosh up geyser-like in the place of these phenomena when we least expect it. These photographs disclose an unsuspected wealth of analogies and forms. Only photography can do this.... *Urformen* of art -- true enough. But what are they other than *Urformen* of Nature? Forms which were never mere models for art, but were from the start the *Urformen* at work for all creation. Even the coolest observer would be given pause by the way that the enlargement of plant parts at the macroscopic level ... displays forms as extraordinary as

those at the microscopic level.... And if ... avant-garde painters such as Klee and ... Kandinsky, have long been concerned to familiarize us with realms which the microscope so brusquely and forcefully wished to abduct us to, these enlargements of plants contain, even moreso, vegetal *Stilformen*.²⁶²

What is astonishing in this review is not only that Benjamin recognizes the analogy between scientific photography and the art of Klee and Kandinsky, but that he embeds this recognition within a Francéan awareness of the "Urformen at work for all creation," natural forms which "have developed from one of the deepest, most unfathomable forms of creation -- from the mutation in which the element of genius has always resided -- the collective creative power of Nature.... One is tempted to call it the feminine, organic, principle of life -- yielding - - infinite -- artful -- ubiquitous."²⁶³

As Detlef Mertens has subtly shown, however, "without relinquishing hope for the return of experience, organicity, and aura, but also without pretence to depict it or create it, [in the early 30s] Benjamin adopted a radically anti-organic perspective aimed at working through the problems of capitalism, industry, and the technological environment they were producing."²⁶⁴ Given his praise for Klages' *Der Geist als Widersacher der Seele* in 1930, however, I would qualify this by saying that with the historical situation of the early 30s, Benjamin tended to repress his Organicism, indeed his biocentric tendencies, but that they erupted every once in a while. His review of Blossfeldt's photographs was one such eruption.²⁶⁵

Benjamin was not the first to note the naturamorphic analogy. We have seen in Chapter Three that a key Bioromantic artist such as Kandinsky anticipated the naturamorphic analogy prior to the First World War, and that he articulated it clearly in 1926. We have noted in Chapter Four, furthermore, that biocentric Constructivist artist-theorists such as Lazar El Lissitzky and (more obliquely) Moholy-Nagy, were articulat-

ing the naturamorphic analogy by about 1924. In the introduction I noted that in 1928, when Benjamin was writing, Kállai's eventual replacement, Meyer's close friend, Karel Teige, compared the Surrealist paintings of the Czech artists Jan Styrsky and Toyen to undersea film stills from the UFA film *Wunder des Blauen Golfes* in a layout of his magazine *ReD*.²⁶⁶ Benjamin was not the first, furthermore, to imply a psychobiological explanation for this analogy. In Chapter Four I pointed out that Lissitzky did so directly, and Moholy did by implication. If it were any one of the few examples of the naturamorphic analogy available at the time, Benjamin's would have inspired Kállai to notice it himself. Benjamin's Francéan and Neo-Vitalist frame, furthermore, makes it the earliest -- even if brief -- conceptualization of the major components of Kállai's own construction of *Bioromantik*.

ii. Epiphany

On page twelve of the 1947 booklet *A természet rejtett arca* [The hidden face of nature] Kállai describes a formative experience he had in Germany:

Many years ago, at an exhibition of scientific photography, I saw microscopic photographs of the scales of a butterfly wing, and a section of a snake's jawbone. In both of them, a fabric of extremely thin fibres lay before me, and this material, displaying itself in its basic structure, conveyed to me its pulsating life through the transparency of its paired-down structure, much as the filaments of a tungsten light-bulb do electricity. I happened upon a phenomenon which displayed a surprisingly parallel structure to the microphotographs in a coloured graphic work by the young German painter Fritz Kuhr. It depicted a figure reminiscent of a gas mask.... It was a work of extraordinarily fine sensitivity; one could call it an x-ray of the soul. But it would be a mistake to suppose that this work was created on the basis of scientific photographs. The artist simply followed the images emerging from his subconscious in order to conceive this mask-like phenomenon. Meanwhile, he involuntarily produced ... a painterly fabric resembling the inner structure of plant and animal organisms.²⁶⁷

While we have seen in the passage from "Bioromantik" quoted at the start of this chapter that Kállai was proposing that artists were looking at scientific images, here he limits his explanation of the analogy to a psychobiological one, to humanity's rootedness in nature. Kállai mentions that it was at an exhibition of scientific photographs that he -- presumably shortly after having seen a work by the Bauhaus student and instructor Fritz Kuhr -- came to this realization. This would have been the FIFO show.

When discussing the work of Fritz Winter, Kuhr and the others in the spring of 1929, at the time of their travelling exhibition "Junge Bauhausmaler," Kállai did not make use of scientific image similes. Rather, much as the Dessau art critic and Bauhaus supporter Ludwig Grote did, he referred to their work as "spiritual," "irrational," "metaphysical," and "romantic."²⁶³ Though Kállai was aware of the power of microscopic photographs and films by 1926, the earliest microscopic analogy with a work of art I can find in his writings is on page six of the September 1930 catalogue of the "Vision und Formgesetz" exhibition at the Galerie Ferdinand Möller, whose final form Kállai developed and conceived, and which he helped Möller curate: "Man beobachtete, wie besonders bei Fritz Winter, Formen, die an Mikroorganismen erinnern, einen Raum und Bild schaffenden Sinn erhalten, der mitunter ins Monumentale geht."²⁶⁹

Since Kállai's naturamorphic epiphany occurred in relation to a work by Fritz Kuhr, it would be likely that Kállai had ready access at the time to Kuhr's works. As it happened, a show of Fritz Kuhr's graphic work was on display at the Bauhaus between the 5th and 10th of June in 1929.²⁷⁰ Thus, it is safe to assume that this epiphany occurred sometime between about May-June 1929, the time of Kuhr's exhibition at the Bauhaus, and the summer of 1930, when his text of Winter's work appeared.

As it happens, the "Film und Foto" exhibition's original

and largest showing at Stuttgart (18 May-7 July) was coterminous with Kuhr's Bauhaus exhibition.²⁷¹ Moholy's "Raum 1" at the FIFO exhibition contained x-ray and microscopic photographs, though we do not know precisely which ones, so it is impossible to confirm whether there was a cross-section of a snake's jawbone, and a micro-photograph of a butterfly wing, though Kállai included a micrograph of a snake's jawbone in an exhibition he curated in Budapest, and this resembles Fritz Kuhr's work *Die Idee*.²⁷² (Figs. 5-19, 5-20, 5-21) We have seen that Kállai saw the FIFO and gave it a bad review, criticizing Moholy-Nagy and the photographers of the New Vision, while having "Kein Wort gegen die tatsächlich dokumentarische Photographie, wie man sie in illustrierten Wochenschriften, in Kinoberichten, Kulturfilmen und erst recht in wissenschaftlichen Publikationen auch volkstümlicher Art zu Hunderten und Tausenden sehen kann," including photographs of this kind in the exhibition itself (my emphasis).²⁷³

If the epiphany escaped Kállai at the FIFO's Stuttgart showing, furthermore, it could have happened at its Berlin venue between 19 October and 17 November, just after Kuhr's second Bauhaus exhibition of the year, on display from 13 to 15 October, and shortly after Kállai must have returned to Berlin from Dessau.²⁷⁴ While there were other showings of scientific photographs at the time, because of the coincidence of the two Kuhr exhibitions with the Stuttgart and Berlin showings of the FIFO, and because we know Kállai saw it in Stuttgart and easily could have seen it in Berlin, they must remain as the most likely alternatives.²⁷⁵

iii. *Bioromantik*

Man bekommt also einigermaßen verweilende Aufnahmen der vulkanischen Ausbrüche zu sehen. Stossweise werden ungeheure schwere kochende Wolkenmassen in die Höhe geschleudert, woher sie breit und gravitatisch auf den Meeres-spiegel niedergehen, um neuen Eruptionen zu weichen. Das Schauspiel ist von vollendeter Rythmik der räumlich-zeitlichen Entfaltung.

Und diese einfache rythmische Folge der Eruptionen ist das eigentlich Bedeutende und Überwältigende des ganzen Naturphänomens. Man sieht die Urkraft Erde sich im gleichen Rythmus ihrer feurigen Atemzüge heben und senken, der auch uns belebt. Die Schöpfung selbst offenbart sich, drohend-erheben über uns und unserm Herzen dennoch mütterlich-wohlvertaut. Keine höchste geistige Gipfelung, weder Kunst noch Philosophie, vermag uns mehr vom Wesen der Welt zu geben als diese rythmischen Ausbrüche des Vulkans Krakatau. Rythmus: im letzten elementarsten Sinn Quelle der Natur und Ziel des Geistes. (Kállai 1930)²⁷⁶

By 1930 -- as in this review of the film "Maha" about Bali, Java and the Krakatoa volcano -- Kállai's biocentrism was the basis of all his critical writing. Away from the Bauhaus, during the early 30s, Kállai developed his Klagesian biocentric conception of artistic production and meaning in a remarkable series of articles published in Germany and Czechoslovakia which remains to this day the most comprehensive treatment of the theme in the critical literature: "Kunst und Wirklichkeit" and "Kunst und Technik" of 1931, "Zurück zum Ornament" and "Bioromantik" of 1932, "Zeichen und Bilder" of 1933, and finally "Ornament und Bild" of 1935. Though unsystematic, Kállai's writings constitute a coherent corpus of biocentric art theory and criticism.

In "Kunst und Wirklichkeit," Kállai discussed the deep drives discussed in his review of the Krakatoa documentary as erupting into contemporary art production unconsciously:

Die Wissenschaft bestätigt es: Der Mensch, die Natur, sie leben zwar im perspektivisch darzustellenden, endlichen, körperlichen Raum. Aber in diesem Äussern ihres Lebens wirken verborgene, sich bis ins Grenzenlose sowohl der Chaotik als auch der Harmonie erstreckende Räume seelischer, biologischer, zahlen-gesetzlicher Funktionen, Determinationen. Und das äussere Erscheinen, äussere Gebaren der menschlichen oder sonstwie gearteten Wirklichkeit ist nur Ausdruck und Verkleidung dieser tiefen Beschaffenheit. Im körperliche Lebensraum der tiefere, umfassendere irrationale Lebensraum. In der körperlichen Wirklichkeit die irrationale Wirklichkeit. Indem die moderne Kunst Visionen und Symbole dieser irrationalen Wirklichkeit schafft, streckt sie ihre Fühler

nach einer neuen Lebensordnung aus, die das mörderische Wuchern der mechanistisch-quantitativen Kräfte in Wirtschaft und Technik zu meistern und den Menschen zur seelisch-geistigen Selbstbesinnung zu führen weiss.²⁷⁷

Kállai applied the Klagesian category of rhythm in nature to the artistic production of his day in his 1930 articles "Rhythmus in Bildern" and "Vision und Formgesetz." In them he held that some of the best recent art expressed this rhythmic nature of reality. Concerning such work he wrote of

Ihren utopischen Glauben an eine kühle geistige Vollendung des Lebens. Zugleich aber auch ihre erweiterte und durchdringende Tiefenerkenntnis von leib-seelischen Beschaffenheiten. Ihr heiss überströmendes Gefühl, jeglicher Kreatur in Wesensgemeinschaft innigst verbunden zu sein. Der Mensch ist geistige Potenz, Erkennen und Konstrukteur hohen Ranges. Doch er treibt im gleichen Kreislauf von Naturgewalten des Blutes, des Geschlechts und des Hungers, der Keimung und des Todes wie Tier und Pflanze.²⁷⁸

This reality was also visible in scientific images of nature. We have seen that in "Vision und Formgesetz" Kállai employed the naturamorphic analogy in his critical writing on Fritz Winter. He developed this idea further in the 1931 article "Kunst und Technik," linking this biocentric attitude to Surrealist biomorphic style:

Die Surrealisten überraschten mit der pessimistisch trockenen Umdeutung harmloser, wenn nicht banalster Motive zu einer phantastisch verödeten Welt, in die Natur und Menschenwerk, vornehmlich grade technisches Menschenwerk, nur noch als armselige Bruchstücke vereinzelt hineinragen. Oder sie lassen in Gestalt und Antlitz des Menschen die biologischen Urgründe seines Wesens, seine Unerlöstheit von Tier, Pflanze und Erdreich hervorstarren (Giorgio di Chirico, Max Ernst, G.H. Roux, Jean Miro, Jacques Lipshitz). Sie versuchen die verschiedensten Lebensvorgänge in eine gemeinsame rythmische Formel einzufangen (André Masson) ... Arp, Foltyn, Fritz Winter, Constantin Brancusi, Richard Haizmann und Henry Moore schliesslich bringen naturhaft organisches Wachstum zur äussersten elementaren Verdichtung seiner Energie und seiner Gestalt, die in einer weiter nicht zu motivierenden, unerklärlichen Weise:

eben irrational, lebendig ist. Durch Formen, die, wenn überhaupt, an Gegenständliches nur noch ganz ungefähr oder embryonal erinnern und trotzdem von klarster Spannung beherrscht sind.²⁷⁹

A pedagogue by training and character, Kállai was eager to communicate his insight concerning the way that Modern art, both *Bioromantik* and Constructivism, reflects what he saw to be "reality" -- the ways in which it communicates the essential dialectic of *Geist* and *Seele*, reason and intuition, a love of technology and organization on the one hand, and an awareness of and love for our rootedness in the natural, on the other -- at work in the world. Kállai wished to speak of the biocentric "truth" about humanity's rootedness in the biological, in nature.

In May of 1931, as an outgrowth of "Vision und Formgesetz," Kállai prepared an exhibition proposal in conjunction with Ferdinand Möller for the Leipzig Museum entitled "Kunst und Wirklichkeit. Das neue Weltbild der Kunst."²⁸⁰ Kállai intended it as a large didactic exhibition including 400 works by 70 to 75 artists, in which he hoped to demonstrate to a wide audience -- and in contrast to popular belief -- the direct links to reality that modern art movements such as Expressionism, Surrealism, Cubism and Constructivism had. In order to illustrate his thesis, Kállai intended in the first room, just as in the FIFO, to include "eine Reihe von photographischen Aufnahmen verschiedenster Themata. Sociales, Arbeit, Vergnügung, Geburt, Tod, Krieg, Revolution, Kriminelles ... Natur, Stadt, Technik, biologische Aufnahmen, Röntgenfotos, Zellengebilde, Astronomisches usw.," and to refer in text panels to the new research results of psychology and the natural sciences, providing evidence of the deep structures of reality.²⁸¹ In the proposal he also pointed out how relativity theory and the "new post-Darwinian" biology had replaced the materialist world view and how the theory of evolution had been superseded by the neo-Lamarckian teleological position that every living creature contains within itself the blue-

natural sciences, providing evidence of the deep structures of reality.²⁸¹ In the proposal he also pointed out how relativity theory and the "new post-Darwinian" biology had replaced the materialist world view and how the theory of evolution had been superseded by the neo-Lamarckian teleological position that every living creature contains within itself the blueprints of its own full development.²⁸² Important in this connection were the writings of the eccentric palaeontologist Edgar Dacqué, who, as we saw in Chapter Two, had a following among some biocentric art figures such as Kandinsky, Mies van der Rohe and Hugo Häring. Kállai proposed to include, as a text panel, Dacqué's post-Darwinian definition of the *Urform*, in a quotation from his book *Urwelt, Sage und Menschheit*.²⁸³

While including works by Impressionists, Cubists, Expressionists and others, the exhibition was to focus on the work of artists he referred to as "Surrealists" and "Constructivists." Works by the latter (essentially the geometric abstract painters) were to show, on the one hand, the harmony and deep structures of nature (accompanied by a quotation from Albert Einstein), and on the other, their feel for the possibilities of new technologies. As we have seen, these he referred to as *Technoromantik*. Works by "Surrealists" were to represent the creative powers of nature as rendered in organic abstract works (Arp, Fritz Winter, Brancusi), and their expression of the -- in a Dacquéan sense -- "demonic" in humanity and the world.²⁸⁴ As in the Itten Schule show of 1928, scientific photographs were to be included in the exhibition. But now the works of the artists were to be displayed in direct, rhetorical conjunction with "Vergrößerungen von biologischen Aufnahmen ... (auch Mikrofotos), in denen die formalen Analogien zwischen Tier, Pflanze und Mensch deutlich waren."²⁸⁵ Thus, Kállai was able to systematize what he considered the important Modernist art of his day into a schema which anticipated Barr's "biomorphic abstract" and "geometric abstract" categories, while placing them into a context much richer than

that which Barr was able to provide in his framing work.²⁸⁶

For financial reasons, the Leipzig Museum was not able to accept his proposal.²⁸⁷ However, some of its ideas were presented in "Zeichen und Bilder," a lecture Kállai held in 1932 for the opening of an exhibition in Wiesbaden. This exhibition adopted "Zeichen und Bilder" as its title and travelled to the Museum Folkwang and to Frankfurt in 1932-33.²⁸⁸ Its proposal to juxtapose scientific photographs and modernist art was realized -- even if modestly -- in Budapest at Kállai's Galeria a Négy Világtájhoz [Gallery to the Earth's Four Quarters], as the 1947 exhibition "Új Világkép" [New world image]. (Figs. 5-19, 5-22, 5-23) This systematization culminated in Kállai's article "Bioromantik," in which Kállai constructed the biomorphic Modernist and biocentric category of art-making in his time, and which has been discussed in detail in Chapter One.²⁸⁹ (Fig. 5-24)

At this point Kállai tended to valorize *Bioromantik* over Constructivism because of what he saw as the "technomaniac" nature of society. One of the reasons Kállai promoted *Bioromantik* was that -- unlike geometric abstraction, which had become fashionable -- he saw it as being resistant to stylishness and therefore to commodification.²⁹⁰ He identified it as a zone of resistance to the exaggerated expression of *Geist* in Capitalism. While prescient in his identification of Bioromanticism as trend, he could not have been more wrong in this regard, as the biomorphic styles of the 40s and 50s of everything from cars to sinks amply demonstrates. The experience of the recent commodification of what Lucy Lippard termed the "dematerialized art object" of the late 60s shows that *literally nothing* can resist commodification in Capitalism.²⁹¹

While warning the reader to remain aware of our deep connection with nature's forces despite our life in technologized societies, however, in "Grenzen der Technik" Kállai states his opposition to an anti-Modernist rejection of technology:

Auch dem Primitiven sind die Segnungen seiner leib-

seelischen Harmonie nicht im Schlafe gegeben und nicht unbestritten. Auch sein Dasein ist der Notwendigkeit des materiellen und geistigen Kampfes unterworfen. Also keine sentimentale Rückkehr zu ihm, zur Natur, sondern Vorwärts! Der Mensch muss den Weg zu Ende gehn, den er mit seinem Erscheinen auf Erden betreten hat, auch wenn er die Verheissungen des technoiden Optimismus zu den Wunschträumen einer neuen, materialistischen Glaubenslehre zählt!²⁹²

It is important to emphasize that despite his utopian hope that it would resist the commodification that the geometric/Constructivist *Formenwelt* had undergone through the popularization of the "Bauhaus Style," Kállai was not necessarily valorizing *Bioromantik* as a trend in art above all others. Thus, in "Zurück zum Ornament" of 1932, Kállai legitimized the "ornamental" nature of much Modernist art as the expression of the essential rhythms and structures of the "natural" ground, and therefore of our essential rootedness in nature, whether that art be biomorphically or geometrically abstract.²⁹³ In fact, while he saw it as crucial to maintain an awareness of our rootedness in nature, as shown in Chapter One, he saw *Bioromantik* as comprising only one half of a necessary dialectical pairing of art-making which reflected the Klagesian division of *Seele* and *Geist*:

Wir glauben nicht an Götter und Teufel, aber wir haben ein Wissen von ungeheuren dialektischen Spannungen im Dasein, von denen die sozialen nur eine Resultante nebst vielen andern sind. Wir wissen um das Schöpferische des Widerspruchs, um das Grundbedingte der dissonantischen Paarung von Trieb und Geist, von Chaotik und Konstruktion im Gefüge unserer Welt. Dieses Weltbild, das alle Grenzen des bürgerlichen Vergleichs zu 50% genannt Materialismus-Idealismus zersprengt, war Jahrhunderte verschüttet, kam durch Nietzsche zum gewaltigen neuen Anbruch und wird noch unerhörte Triumphe der Kulture feiern. Was in der visionär und konstruktiv bestimmten Kunst des letzten fünfzig Jahre an entscheidenden schöpferischen Leistungen zustande kam, ist schon sein Triumph.²⁹⁴

Just as the "social" is just one resultant of the forces which shape reality, as an art which reflects an "awareness" of our

rootedness in nature, i.e. a biocentric *Weltanschauung*, or as an art which reflects such a rootedness unconsciously, *Bioromantik* for Kállai is only one half of a dialectical pairing within Modernism. The other half of this coupling is art which celebrates technology and rationalism, i.e. "Constructivism" in its widest sense. Though based on the Klagesian schema of *Seele* vs. *Geist*, unlike Klages, Kállai does not demonize *Geist* absolutely. Rather, he speaks of Bioromantic art as part of an antidote to rampant *Geistig* technologism in modernity, whether that modernity take form as Capitalism, Stalinism or Fascism. We have seen that Klee wrote in Kállai's first issue of *bauhaus* that "Wir konstruieren und konstruieren und doch ist Intuition noch eine gute Sache."²⁹⁵ Like Klee, Kállai avoided the totalizing tendencies of biocentrism in his writing.

Kállai's conception of "Bioromantik" was -- as we saw in Chapter One -- the first coherent, and developed formulation of ideas which had been circulating in central Europe for a decade, and to this day it is the most extensive. While this series of articles was not widely read due to the time and place of their publication, it was a crucial marker of a complex cultural pattern involving the fine arts, photography and scientific photography, both reporting on and informed by biocentrism. "Bioromantik" is, in my view, a useful conceptualization of some aspects of the artistic culture of the period, and is therefore to be retained and developed. Particularly important will be the more detailed investigation of the encounter between major Bioromantic artists and scientific photography on the one hand, and a more detailed analysis of the art, on the other. Finally, Bioromanticism can form a basis for the historical contextualization of those artistic forms gaining ground today, from Eco-Art to Body Art and art that deals with the phenomenon of genetic engineering, which deal with biological and ecological issues, but which at present float in an ahistorical vacuum, much the way that environmentalism itself does.

Endnotes

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2. Ernst Haeckel, *The Riddle of the Universe*. Translated by Joseph McCabe. (New York: Harper and Bros., 1900), 341.
3. Walter Benjamin, "Neues von Blumen." Review of Karl Blossfeldt, *Urformen der Kunst*, *Die Literarische Welt* 4, no. 47 (23 November 1928). Translation by Oliver Botar.
4. Ernő Kállai, "Bioromantik," *Forum* (1932): 271, 273, 274.
5. Wassily Kandinsky, "Two Directions" (1935). In: Kandinsky, *Complete Writings on Art*. Kenneth C. Lindsay and Peter Vergo, eds. (New York: Da Capo, 1994), 779.
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8. Leo Steinberg, "The Eye is a Part of the Mind," *Partisan Review* 20, no. 2 (1953): 210.
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13. Brian O'Doherty, Preface to Lewis R. Wolberg, *Micro-Art: Images in a Hidden World* (New York: Abrams, 1978), xix.
14. Harry Robin, *The Scientific Image: From Cave to Computer* (Abrams: New York, 1992), 126-7.

15. Didi Hubermann, "Photography: Scientific and Pseudo-Scientific," in: Jean-Claude Lemagny and André Rouillé, eds., *A History of Photography: Social and Cultural Perspectives* (Cambridge: Cambridge University Press, 1987), 71.
16. O'Doherty, Preface to Wolberg, *Micro-Art*, xiv.
17. Gert Mattenklott, "Kunst, Natur und Technik um 1900," in *Karl Blossfeldt 1865-1932. Das photographische Werk* (Munich: Schirmer/Mosel, 1981); Thomas Kröger, "'...gleichsam biologische Urzeichen...' Die Erfindung biomorpher Natur in Malerei und Fotografie der dreissiger Jahre." *Kritische Berichte* 18, no. 4 (April 1990): 73-87; Andreas Hünnecke and Gerhard Ihrke, *Karl Blossfeldt. Fotografien zwischen Natur und Kunst* (Leipzig: Fotokino Verlag, 1990).
18. Janet E. Buerger, *French Daguerreotypes* (Chicago: University of Chicago Press, 1989), 82. On early photomicrography, see also Erich Stenger, *The History of Photography* (1939). (Reprint: New York: Arno Press, 1979), 89-90. The "atlases" and "splendidly illustrated books" of Alfred Donné (1844) and Joseph Gerlach (1863) indicate an early openness to the aesthetic pleasures of micrography on the part of scientists and the public, if not the art world.
19. Beaumont Newhall, *Photography: A Short Critical History* [1937] Second edition. (New York: The Museum of Modern Art, 1938), 86. Newhall sent Moholy-Nagy (who was in London at the time) a copy of the first edition of his book. Newhall's dedication, dated 17 March 1937, is curiously fragmentary, but refers to discussions they had already had on photography, suggesting that they met in London when Newhall was researching his book. (The page on which the dedication was written was detached from the book by Sibyl Moholy-Nagy and taped into a copy of the 1949 edition, now in the possession of Hattula Moholy-Nagy, Ann Arbor, Michigan.) Moholy thanked Newhall in a letter of 7 April 1937, sent from London. (Published in Richard Kostelanetz, ed., *Moholy-Nagy* {New York: Praeger, 1970}, 57). On the friendship, which lasted until Moholy's death, see Newhall, *Focus. Memoirs of a Life in Photography* (Boston: Little Brown & Co., 1993), 47, 63, 170-72. As already indicated, Newhall was explicit in his writings concerning what he learned from Moholy. That Moholy appreciated Newhall's work and ideas is indicated in his letter of 1937 and by the fact that he invited him to teach at the School of Design in 1945.
20. Beaumont Newhall, *The History of Photography from 1839 to the Present Day* (New York: Museum of Modern Art, 1949), 216. Moholy's New Vision is discussed on page 215.
21. On the "Film und Foto" (or "FIFO") exhibition, and Kállai's remembrance of it, see below.

22. Herbert Read, *Education Through Art* (New York: Viking, 1945), 16.

23. Ernő Kállai, "Ideen- und Organisationsentwurf zu einer Internationalen Ausstellung moderner Kunst im Leipziger Museum, mit dem Namen 'Kunst und Wirklichkeit'," typescript in the Archive of the Art Historical Research Group, Hungarian Academy of Sciences, Budapest (henceforth: "M.K.Cs.") (inv. no.: MDK-C-I-11/573/9). On this proposal, see Gábor Pataki, "Technoromantik," in; Hubertus Gassner, Karlheinz Kopanski and Karin Stengel, eds., *Die Konstruktion der Utopie* (Kassel and Marburg: documenta Archiv and Jonas Verlag, 1992), 203-7.

24. Ernő Kállai, *A természet rejtett arca* [The hidden face of nature] (Budapest: Misztótfalusi, 1947).

25. The exhibition "The New Landscape" was organized by Kállai's compatriot György Kepes at the Massachusetts Institute of Technology in 1951. The anthology of writings that developed from this project, published in Kepes' "Vision + Value" series in 1956 as *The New Landscape in Art and Science* (Chicago: Paul Theobald), is one of the most important publications in this vein. Also in 1951 was "Growth and Form," a show organized by Richard Hamilton and others at the Institute of Contemporary Art in London, in memory of D'Arcy Wentworth Thompson. Just as with "The New Landscape," an anthology of writings entitled *Aspects of Form*, edited by Lancelot Law Whyte, appeared in association with this exhibition, with an introduction by Herbert Read. (London: Percy Lund Humphries, 1951) The next cluster of interest in the subject occurred towards the end of the decade, in 1958. In Basel, the exhibition "Kunst und Naturform" was organized, while in New York, at the Whitney Museum, John H. Baur curated the exhibition "Nature in Abstraction: The Relation of Abstract Painting and Sculpture to Nature in Twentieth Century American Art." Catalogues were published in conjunction with both exhibitions: John I. H. Baur, *Nature in Abstraction: The Relation of Abstract Painting and Sculpture to Nature in Twentieth Century American Art* (New York: Whitney Museum of American Art, 1958); Robert Schenk and Georg Schmidt, *Form in Art and Nature*. (Basle: Basilius-Press, 1960). Another decade later Jack Burnham's book *Beyond Modern Sculpture. The Effects of Science and Technology on the Sculpture of this Century* (New York: George Braziller, 1968) appeared; and even more important was Phillip C. Ritterbush, *The Art of Organic Forms* (Washington, D.C.: Smithsonian Institution Press, 1968), published in conjunction with an exhibition held at the Smithsonian Institution in Washington D.C. that same year.

26. Adolf Portmann in Schenk and Schmidt, *Kunst und Naturform*, 15-16.

27. O'Doherty, Preface to Wolberg, *Micro-Art*, xviii.
28. On this subject, which awaits systematic investigation, see the Introduction, endnote 77.
29. August Wiedmann, *Romantic Roots of Modern Art* (Old Woking, Surrey, England: Gresham Press, 1979), 286, note 22.
30. Thomas Brandt, "Von der Reduktion zum Wachstum: Vom Wandel geometrischen Formen in den 30er Jahren," in: 1937. "... und nicht die leiseste Spur einer Vorschrift" -- Positionen unabhängiger Kunst in Europa um 1937 exh. cat. (Düsseldorf: Kunstsammlung Nordrhein-Westfalen, 1987), 23 and Michael Kröger, "'...gleichsam biologische Urzeichen....'"
31. The two men were close during the early 1920s, when Kállai was one of Moholy's chief critical supporters. The relationship cooled later in the decade, as Kállai became increasingly critical of Moholy's artistic practice. This cooling may also have contributed to Kállai's lack of emphasis on the importance of Moholy's ideas to his own theory. On this relationship as it relates to photography, see Éva Forgács, "Seifenblasengleich: Der Konflikt zwischen Kállai und Moholy-Nagy in der Diskussion um das Verhältnis von Malerei und Fotografie in 1927," in Gassner, Kopanski and Stengel, eds., *Die Konstruktion der Utopie, 197-202*.
- In addition, some artists were exposed to scientific films. While I cannot explore this subject here, let me just point to the projection of scientific films in conjunction with the Bauhausausstellung of 1923 and the FIFO in Stuttgart in 1929, as well as to the Surrealists' fascination with the films of Jean Painlevé in France from the mid 20s on.
32. Pataki, "Technoromantik," 205.
33. Buerger, *French Daguerreotypes*, 92.
34. Ibid. Buerger writes, "In the exhibitions, the works of scientists were frequently judged on their artistic merit -- in fact, no distinction was made between photographs of scientists and those who called themselves 'artistes-photographes.'"
35. On Hamburg: Erste Internationale Amateurphotographieausstellung, Hamburg, 1893. Note: This exhibition, organized by Alfred Lichtwark, director of the Hamburg Kunsthalle, was innovative in that it marked the beginning of Pictorialist photography in Germany, and was organized at the museum, an innovation at the time. "The public was astounded to find over seven thousand photographs on display in the painting galleries of an art museum." The Hamburg exhibitions became annual events. Newhall, *The History of Photography* (1964), 100, 102. On Berlin: "2. Internationale Ausstellung für Ama-

teurphotographie", 1896. "Insbesondere waren es die Leistungen der wissenschaftlichen Photographie und die Bestrebungen der Kunst-photographie, die auf der Berliner Ausstellung Aufmerksamkeit erregten." F.[ritz] H.[ansen], "Photo-Ausstellungen," *Photographische Chronik* 32, no. 62 (22 September 1925): 442. At the "Berliner Gewerbeausstellung" that same year (1896), according to Hansen, there was an exhibition on the development of photography assembled by Prof. H.W. Vogel. On Dresden: Fritz Hansen, "Photographische Ausstellungen," *Das deutsche Lichtbild. Jahresschau 1937* (Berlin: Bruno Schultz, 1937): T37-T41. For an earlier version of his essay on the history of photographic exhibitions, see F.[ritz] H.[ansen], "Photo-Ausstellungen," 441-43.

36. Hansen, "Photographische Ausstellungen," T41. Eugen Claassen agrees that this was the most important German photographic exhibition until the "Deutsche Photographische Ausstellung" held in Frankfurt in 1926. "Deutsche Photographische Ausstellung 1926, Frankfurt a. M.," *Die Form* 1, no. 12 (September 1926): 275.

37. Ute Eskildsen, "Fotokunst statt Kunstphotographie. Die Durchsetzung des fotografischen Mediums in Deutschland," in Ute Eskildsen and Jan-Christopher Horak, *Film und Foto der zwanziger Jahre. Eine Betrachtung der Internationalen Werkbundaustellung "Film und Foto" 1929* (Stuttgart: Gerd Hatje, 1979), 8.

38. Interview with Imogen Cunningham, in Paul Hill and Thomas Cooper, *Dialogue with Photography* (London: Thames and Hudson, 1974), 294-95.

39. Eskildsen, "Fotokunst statt Kunstphotographie," 12.

40. F.[ritz] H.[ansen], "Photo-Ausstellungen," 442.

41. "Der wissenschaftliche Photographie war im Jahre 1900 eine Spezialausstellung gewidmet, welche die Dresdner Gesellschaft zur Förderung der Amateurphotographie in Dresden veranstaltet." F.[ritz] H.[ansen], "Photo-Ausstellungen," 442. According to Lucia Moholy, the first Congress of Scientific Photography took place in Paris in 1889. Lucia Moholy, *A Hundred Years of Photography 1839-1939* (London: Penguin, 1939), 132.

42. Hans M. Wingler, in his Editor's Note to the reissue of the 1927 edition *Malerei, Fotografie, Film* of this book. (Mainz and Berlin: Florian Kupferberg, 1967), 141.

43. Eskildsen and Horak, *Film und Foto der zwanziger Jahre*, 190. See also Fritz Hansen, "Photographie und Presse. Das Zeitalter des Bildes auf der Kipho," *Photographische Chronik*, 32, no. 66 (6 October 1925): 467-68 and Fritz Hansen, "Kipho-

Nachruf," *Photographische Chronik* 32, no. 67 (10 October 1925): 474; a three-part report on the exhibition by an unidentified author, "Die Kipho-Ausstellung in Berlin," p. 383; "Weiteres von der Kipho-Ausstellung," pp. 401-03 and "Die Kipho-Ausstellung in Berlin," pp. 427-28, *Photographische Rundschau und Mitteilungen* 62 (1925).

44. No author, "Die 'Kipho', Kino- und Photo-Ausstellung Berlin 1925," *Die Photographische Industrie* no. 40 (5 October 1925): 1089. Endowed by Wilhelm Adolf Lette, the Lette-Verein was a proto-Feminist school founded in Berlin in 1866 to train women in occupations that would help them support themselves. By 1926, the 60th anniversary of the school, it had 2800 students. The photographic training institute (photographische Lehranstalt), established by Schultz-Hencke in 1890 (x-ray photography was introduced at the early date of 1896), built up an archive of images which formed the basis for a photo-agency. By the 1920s this agency was one of the primary sources for scientific imagery in Germany. Sadly, the archive was destroyed during the Second World War, though the Verein survives to this day as an institution. On the Lette-Verein, see Eskildsen and Horak, eds., *Film und Foto der 20er Jahre*, 87 and "E-n," "60-Jahre Lette-Verein," *Photographische Chronik* 33, no. 18 (2 March 1926): 98.

45. No author, "Die 'Kipho', Kino- und Photo-Ausstellung Berlin 1925," 1089. On the Lette-Verein and the Darmstadt school, see also: no author, "Weiteres von der KIPHO-Austellung," *Photographische Rundschau- und Mitteilungen* 62 (1925): 401.

46."n." "Die Fachphotographie in der Kipho," *Photographische Chronik* 32, no. 69 (17 October 1925): 486. Eskildsen remarks only on scientific and technical content in the exhibition. On the Lette Verein and other scientific content: no author, "Weiteres von der Kipho-Ausstellung," 401.

47. Eskildsen, "Fotokunst statt Kunstphotographie," 8. On the Stenger display, see "Die Kipho-Ausstellung in Berlin," 383 and "Weiteres von der Kipho-Ausstellung," 401, and no author, "Die 'Kipho', Kino- und Photo-Ausstellung Berlin 1925," 1089.

48. Rolf Sachsse, *Lucia Moholy*, (Düsseldorf: Edition Marzona, 1985), 52, 53, 59.

49. Fritz Hansen, "Kipho-Nachruf."

50. On the success of the show, see, e.g., no author, "Unter uns." *Die Photographische Industrie* no. 38 (20 September 1926): 965. On The exhibition see also, no author, "Wie die Deutsche Photographische Ausstellung eröffnet wurde," *Photographische Chronik* (1926): 387-98.

51. On the prominence of scientific photography: No author, "Die Deutsche Photographische Ausstellung Frankfurt a.M. 1926 und ihre Sonderveranstaltungen," *Die Photographische Industrie* no. 34 (28 August 1925): 865.
52. On the historical display from the Stenger collection, see no author, "Deutsche Photographische Ausstellung Frankfurt a. M." *Photographische Rundschau und Mitteilungen* 63 (1926): 377.
53. Dr. Seddig, "Wissenschaftliche Photographie," in *Deutsche Photographische Ausstellung* (exh. cat.) (Frankfurt/Main: Messe- und Ausstellungsgesellschaft, Frankfurt and the Zentralverband Deutscher Photographenvereinen und Innungen, 1926), 38. The list of exhibitors in Gruppe IV, including many of the scientific research institutes in and around Frankfurt, its universities and its hospitals, also suggests this. See pp. 100ff in the catalogue. Also: Eskildsen, "Fotokunst statt Kunstphotographie," 9.
54. Georg Popp, "Die Anwendung der Photographie in der Wissenschaften," in *Deutsche Photographische Ausstellung* (exh. cat.), 41-42.
55. No author, "Die Deutsche Photographische Ausstellung Frankfurt a.M. 1926 und ihre Sonderveranstaltungen," 865.
56. *Photographische Rundschau und Mitteilungen* 63 (1926): 377.
57. "E-n." "Quer durch die Hallen der Frankfurter Ausstellung," *Photographische Chronik* 33 (1926): 442 and *Photographische Rundschau und Mitteilungen* 63 (1926): 377.
58. E.n. "Quer durch die Hallen der Frankfurter Ausstellung," 442.
59. [Rudolf] Junk, "'Die Deutsche Photographische Ausstellung in Frankfurt am Main,'" *Photographische Korrespondenz* 62, no. 3 (30 Sept. 1926): 164. Junk does not comment on Gruppe IV or any other scientific content. The anonymous author of the review in *Photographische Rundschau und Mitteilungen* 63 (1926): 401 singles out the Lette-Verein for praise.
60. "E-n." "Quer durch die Hallen der Frankfurter Ausstellung": 431.
61. Ibid.
62. No author, "Deutsche Photographische Ausstellung Frankfurt a.M." *Photographische Rundschau und Mitteilungen* 63 (1926): 377.
63. Ibid., 401.

64. Classen, "Deutsche Photographische Ausstellung 1926, Frankfurt/Main": 275-76.
65. Erfurth's work was also singled out by Von Grienwaldt in "Die Gesellschaft Deutscher Lichtbildner auf der Frankfurter Ausstellung," *Photographische Chronik* 33 (1926): 410
66. Classen, "Deutsche photographische Austellung 1926, Frankfurt a.M.," 275.
67. No author, "Die Primärung der Gruppe Berufsphotographie auf der Deutsche Photographische Ausstellung Frankfurt a.M." *Die Photographische Industrie* no. 36 (6 Sept. 1926): 931-33 and Von Grienwaldt, "Die Gesellschaft Deutscher Lichtbildner auf der Frankfurter Ausstellung," 411.
68. No author, "Die Deutsche Photographische Ausstellung Frankfurt a.M. 1926 und ihre Sonderveranstaltungen": 865.
69. No author, "Wie die Deutsche Photographische Ausstellung eröffnet wurde": 387 and no author, "'Das Blumenwunder'," *Photographische Chronik* (1926): 389.
70. The pioneer of scientific time-lapse techniques was Roman Vishniac, who claims to have invented the technique in 1918 and apparently produced the first such film, *A Flower Opening* in Berlin in 1921. See: *Roman Vishniac* (New York: Grossman, 1974), 95. Since the original German title of Vishniac's film is not provided in this source, it is unclear whether *Das Blumenwunder* is in fact this film.
71. No author, "'Das Blumenwunder'": 389.
72. Hannah Höch, quoted in Eberhard Roters, "Künstlerfreunde" in *Hannah Höch: Eine Lebenscollage* Volume 2 (Stuttgart: Gerd Hatje, 1995), 229. I will treat the subject of scientific film elsewhere.
73. On the Stenger display in Basle and these art photographers see "S", "'Hundert Jahre Lichtbild' Ausstellung in Basel vom 9. April bis 8. Mai 1927," *Photographische Rundschau und Mitteilungen* 64 (1927): 201-202.
74. *Hundert Jahre Lichtbild* (exh. cat.) (Basle: Gewerbemuseum Basel, 1927), 25-31,
75. Sachsse, *Lucia Moholy*, 32, Albert Renger-Patzsch, *Die Welt ist schön* (Munich: Kurt Wolff, 1928). There was also a noticeable increase in *Neue Sachlichkeit* material in the 1927 volume of *Photographische Korrespondenz* (63), with the publication of Renger-Patzsch's "Photographie und Kunst" (no. 3: 80-82), Moholy-Nagy's "Die Photographie in der Reklame" (no. 9: 257-

60) as well as examples of *Neue Sachlichkeit* art and scientific photography. This tendency intensified over the next few years in this journal. Note that while he is not wholly credited with the rise of *Neue Sachlichkeit* photography, Moholy-Nagy is credited as the initiator of the *Neues Sehen*. See Andreas Haus, *Moholy-Nagy: Photographs and Photograms* Frederic Samson, trans. (New York: Pantheon Books, 1980), 7.

76. Ute Eskildsen, "Photography and the Neue Sachlichkeit Movement," in David Mellor, ed., *Germany. The New Photography 1927-33* (London: Art Council of Great Britain, 1978): 102.

77. Edwin Redslob, "Photographie und Kunst," *Das Deutsche Lichtbild 1927*: VII.

78. See the note -- presumably by Windisch, the editor -- to Adolf Miethe, "Himmelsphotographie des Liebhabers," *Das Deutsche Lichtbild 1927*, VIII.

79. A note, presumably by Windisch, to Moholy-Nagy, "Die beispiellose Fotografie," *Das Deutsche Lichtbild 1927*, XI.

80. As we have seen in Chapter Three, it was Moholy-Nagy -- by including his work in *Malerei, Photographie, Film* (Munich: Albert Langen, 1925) -- who first incorporated Renger-Patzsch's work into the discourse of high art.

81. László Moholy-Nagy [with Lucia Moholy], "Production-Reproduction," *De Stijl* no. 7 (1922): 97-101 and László Moholy-Nagy, "Light -- A Medium of Plastic Expression," *Broom* 4, no. 4 (1923); both in: Krisztina Passuth, *Moholy-Nagy* (London: Thames and Hudson, 1985), 289-90 and 292-3. See also Eleanor Hight, *Moholy-Nagy: Photography and Film in Weimar Germany* (exh. cat.) (Wellesley, Mass.: Wellesley College Museum, 1985), 16, note 15, and Irene-Charlotte Lusk, *Montagen ins Blaue: Laszlo Moholy-Nagy (sic), Fotomontagen und -collagen 1922-1943* (Giessen: Anabas, 1980), 41.

82. J. Edwin Barnard, *Practical Micro-Photography* (London: Edward Arnold, 1911), 2.

83. Haus, *Moholy-Nagy: Photographs and Photograms*, 7.

84. This is a subject to be explored in a future publication.

85. "Eine Urkunde, die eine Frage ist an das Rätselhafte ringsum, das Leben heisst." Windisch, "German Photography 1928/29," *Das Deutsche Lichtbild* (1928-29), unpag. Translator not indicated. Note that the English translation provided in *Das Deutsche Lichtbild* is imprecise and obscures the biocentric rhetoric of the original.

86. Ibid.

87. On art micrography for amateurs, see: Dr. Kröhnke, "Mikrographische Ausblicke für den Liebhaberphotographen," *Das Deutsche Lichtbild* (1927), XVII. In this article, Dr. Kröhnke actually refers to "mikrographischen Kunst."

88. Windisch, "German Photography 1928/29," unpag.

89. Berlin photographer Karl Hansen is unknown. He published an article in *Photographische Chronik* in 1916 on "Einfache Apparatur für Mikrophotographie," and one in *Das Deutsche Lichtbild 1928-29* on copyright issues. Kröhnke referred to Hansen's 1916 article in his article for the 1927 edition of *Das Deutsche Lichtbild*. Hansen again published art micrography in the last prewar (1938) edition of *Das Deutsche Lichtbild*.

90. See Windisch, "Photographie: ein künstlerisches Volksnahrungsmittel," *Das Kunstblatt* 12 (1928): 74.

91. Windisch, "German Photography 1928/29." Again, the original English translation is garbled, and had to be revised.

92. Ibid.

93. See: Moholy-Nagy, "Scharf oder Unscharf?" *i10* 2, no. 20 (1 April 1929): 163-167. Windisch' soft right biocentrism and Modernism in *Das Deutsche Lichtbild* was transformed into a pro-Nazi stance when the previous publisher, Bruno Schultz, took over as editor in the 1934 edition of the yearbook. In this edition, Schultz greeted the Nazi takeover. Despite this he continued to provide a forum for *Neue Sachlichkeit* photography during the years of National Socialism. The publication in the 1937 and 1938 editions of a selection of Karl Strüwe's art micrography, furthermore, was one of the few ways in which what was essentially abstract art was published, under the guise of it being scientific photography. The publication of *Das Deutsche Lichtbild* was suspended in 1938, and resumed only in 1955.

94. "Prof. Schaja" [Hans Windisch] in *Schaja Foto-Mitteilungen* 5, nos. 9 and 11. Reprinted in *Ibid.*, 163.

95. *Ibid.*, 165.

96. *Ibid.*, 167.

97. *Das Deutsche Lichtbild* 1930, 23, 78.

98. Invitation to the opening of the exhibition *Foto -- Malerei -- Architektur*, (Berlin: Privat Kunsthochschule Johannes Itten, 12 February 1928). Papers of László Moholy-Nagy,

archives of Hattula Moholy-Nagy, Ann Arbor Michigan. See also Willy Rotzler, ed., *Johannes Itten. Werke und Schriften*. (Zurich: Orell Füssli, 1972), 428, 439, 453; Ernst Kállai, "Ausstellung der Kunstschule Johannes Itten, Berlin," *Das neue Frankfurt* 2 (February 1928): 36; P[aul] W[estheim], "Ausstellungen," *Das Kunstblatt* 12 (12 March 1928): 91-2.

99. Moholy-Nagy, *Malerei, Fotografie, Film* (1927), 17.

100. Umbehr was a student at the Bauhaus from 1921-23, after which he worked free-lance on films and photography in Berlin. He was hired by Itten, his professor at the Bauhaus, to teach at the Itten Schule, where he was succeeded by Lucia Moholy in 1929. See: Eskildsen and Horak, *Film und Foto der 20er Jahre*, 245; Rolf Sachsse and Sabine Hartmann, *Lucia Moholy. Bauhaus Fotografin* (Berlin: Bauhaus-Archiv, 1995), 12. See also Herbert Molderings, "Umbo und das Bauhaus," in *Fotografie am Bauhaus* (Berlin: Bauhaus-Archiv, 1990), 34-43.

101. Ernst Kállai, "Der Plastiker Mataré," *Das Kunstblatt* 11 (February 1927): 67-8. "Meyer-Amden" For Oskar Schlemmer's account of the opening -- in which he focuses on the work of his friend Otto Meyer-Amden, see Tut Schlemmer, ed., *The Letters and Diaries of Oskar Schlemmer* (Evanston: Northwestern University Press, 1990), 226. On Meyer-Amden see Michael Stettler, *Otto Meyer-Amdem* (Lausanne: Editions Rencontre, 1970), 52. One can imagine the vernissage, which took place on a Sunday morning, and for which the Schlemmers went into Berlin, was a site of heavy-duty wheeling and dealing concerning the make-up of the new, Meyer-led Bauhaus. (If the major players -- and known reviewers -- attended, then Meyer and Ernő Kállai will both have been there, as well as the Moholy-Nagys, Klee and Kandinsky, Itten, Paul Westheim and Albert Renger-Patzsch.) Gropius had only just announced his intentions to step down in favour of Meyer earlier that same month, and Meyer was already planning his radically altered version of the institution. At this stage it is interesting to note that Meyer envisages Schlemmer as the school's publicist. See Schlemmer's diaries, 226-7.

102. In his review in *Das neue Frankfurt*, Kállai refers to "Spaemann-Straub," presumably students of Moholy-Nagy who made photograms, identified as a team of Bauhaus students by Kees Broos, in "'Zu wenig, um unser Gesicht zu wahren': Die niederländischen Fotografen auf der 'Fifo'," in Eskildsen and Horak, *Film und Foto der zwanziger Jahre*, 173. Walter Peterhans, who was hired to the Bauhaus in 1929 by Meyer, was also included in the exhibition.

103. It was only in 1925, the year Moholy's book was published, that Renger-Patzsch began work as an independent photographer, that his first book of photographs *Das Chorge-*

stühl von Cappenberg was published, and that he had his first exhibition, at his new home of Bad Harzburg. On this, see Chapter Three.

104. Mention of the cinema stills is made in [Kurt] Glaser, "Von neuer Malerei und Photographie. Ein Rundgang durch Berliner Ausstellungen," *Berliner Börsen-Courier* 81 (17 February 1928), 1. Beilage, p. 5.

105. Westheim, "Ausstellungen": 91.

106. Moholy-Nagy, "Neue Wege in der Photographie," *Fotografische Rundschau und Mitteilungen* 65, no. 2 (1928): 33-6.

107. Volker Wahl, "Walter Dexel als Ausstellungsleiter des Kunstvereins Jena" in Walter Vitt, ed., *Hommage à Dexel (1890-1973). Beiträge zum 90. Geburtstag des Künstlers* (Starnberg: Josef Keller Verlag, 1980), 56; Eskildsen, "Fotokunst statt Kunstphotographie," 10; and Ruth Wöbkemeier, *Walter Dexel. Bild, Zeichen, Raum* (exh. cat.) (Bremen: Kunsthalle Bremen, 1990), 12-13.

108. Ute Eskildsen, "Fotokunst statt Kunstphotographie," 9-10.

109. Maria Schmidt, Leiterin, Romantikerhaus, Städtische Museen Jena, letter of 22.7.94 to Oliver Botar. See also Volker Wahl, "Ausstellungen, Vorträge...", 71. On the Itten Schule show, see the list or reviews (not including Kállai's) in Willy Rotzler, *Johannes Itten. Werke und Schriften*. (Zurich: Orell Füssli, 1972), 437.

110. The Bauhaus connection of the Jena exhibition is referred to in Volker Wahl, *Jena als Kunststadt* (Leipzig: VEB, E.A. Seemann, 1988), 219-20.

111. The lists are from the above-mentioned invitations, the identities of some of the -- to me -- unknown photographers are from Vitt, ed., *Hommage à Walter Dexel*, 71.

112. Invitation to "Neue Wege der Photographie" reproduced in Wahl, *Jena als Kunststadt*, 289. Thanks Ute Eskildsen of the Museum Folkwang, Essen, for photocopying her copy of the invitation for me.

113. The Itten Schule show had been extended after its originally scheduled closing date of 5 March. Volker Wahl, "Ausstellungen, Vorträge und literarisch-musikalische Veranstaltungen des Kunstvereins Jena 1916 bis 1928," in Walter Vitt, ed., *Hommage à Dexel*, 71.

114. Dexel uses the impersonal mode when writing that "Die Ausstellung ist sehr lehrreich zusammengestellt." (p. 138) and his concluding remark that the show would be of particular interest in Jena suggests that it might have originated elsewhere. Walter Dexel, "Neue Wege der Photographie," originally published in the Jena newspaper *Das Volk* (14.4.1928), it was reprinted in Walter Dexel, *Der Bauhausstil -- Ein Mythos. Texte 1921-1965*. Walter Witt, ed. (Starnberg: Josef Keller Verlag, 1976), 137-140.

115. Moholy-Nagy first exhibited in Germany with Walter Dexel at the Fritz Gurlitt Gallery in Berlin. It is likely that they met at this time. See Krisztina Passuth, "Ungarische Künstler und die "Konstruktivistische Internationale," in: *Konstruktivistische Internationale -- Schöpferische Arbeitsgemeinschaft, 1922-1927: Utopien für eine Europäische Kultur* exh. cat. (Düsseldorf: Kunstmuseum Nordrhein-Westfalen, 1992), 238 and *Schöne Tage im Haus Dexel... -- Das Gästebuch -- Walter Dexel zum 100. Geburtstag* (Cologne: Galerie Stolz, 1990), 88. Moholy first visited the Dexels on the occasion of the "Dada-Constructivist" congress in Weimar in September 1922, when a party was organized in the Dexel house on the 24th of that month (*Konstruktivistische Internationale*, 206); and again in July 1923 at the time of the opening of the Constructivist exhibition at the Jena Kunstverein. (*Schöne Tage im Haus Dexel*, 29) A cooling in relations between Dexel and Moholy is suggested by the dearth of visits to Dexel's house after 1923, Moholy's sparse participation in exhibitions at the Kunstverein in Jena (Wahl, *Jena als Kunststadt*, 223) and Dexel's close friend Adolf Behne's negative attitude towards Moholy expressed in a letter to Dexel of 2 November 1925. (Vitt, *Homage à Dexel*, 96)

116. Note that as a prominent graphic artist himself, Dexel would have been aware of the Magdeburg organization, and as an acquaintance of Moholy's, likely of the talk as well. The invitation for the Magdeburg talk is reproduced in Catherine David, ed., *László Moholy-Nagy* (exh. cat.) (Marseilles: Musée de Marseille/Réunion des musées nationaux, 1991, 367.

117. Wahl, *Jena als Kunststadt*, 223.

118. Eskildsen, "Fotokunst statt Kunstphotographie," 10.

119. Dexel's article in *Das Volk* is cited in Wahl, 'Walter Dexel als Ausstellungsleiter des Kunstvereins Jena,' 60.

120. See: Horst Franke, "Das Ernst-Haeckel-Haus in Jena. Seine Entwicklung als museale Einrichtung und wissenschaftliche Institut," *Neue Museumskunde* 27 no. 4 (1984): 225.

121. Walter Dexel, "Neue Wege der Photographie." Originally published in the Jena newspaper *Das Volk* (14.4.1928), it was reprinted in Dexel, *Der Bauhausstil -- Ein Mythos*, 137-140.

122. Dexel, "Neue Wege der Photographie," 137-39.

123. Ibid, 138.

124. See Eskildsen, "Fotokunst statt Kunstphotographie, 10. The exhibition included scientific material. "Fotografie der Gegenwart," with a section entitled "Die Aufnahme im Dienst der Wissenschaft und Forschung," also travelled during 1929 to Hannover (10 March-17 April); Berlin (20 April-20 May); Dresden (15 September-6 October); and Magdeburg (28 November-19 December). The Essen show of January-February 1929, where Moholy-Nagy gave a lecture, seems to have been a model for Raum 1 of the Fifo.

125. Quoted in Eskildsen, "Fotokunst statt Kunstphotographie," 10.

126. Information courtesy of Ute Eskildsen, Museum Folkwang, Essen, August 1994. Dr. Eskildsen has informed me that the museum staff are in the process of gathering contemporary newspaper announcements and reviews of the Museum's exhibitions, but they have not yet completed the task for this particular exhibition.

127. No author, "Unter uns.", 101 and Eskildsen, "Fotokunst statt Kunstphotographie," 11.

128. "Es haben ausgestellt...", flyer published by the Ausstellungsamt of the City of Magdeburg for the exhibition "Fotografie der Gegenwart," November 1929. (Photocopy courtesy Ute Eskildsen, Museum Folkwang, Essen) Eskildsen informed me of the lack of a list in August 1994.

129. It could be argued that since many of these photographers were biocentric in their views (Renger-Patzsch, Blossfeldt, and Wolff as well as Fuhrmann, Renger-Patzsch's mentor), there existed a photographic equivalent to Kállai's "Bioromanticism," and that this was the first important display of such "Bioromantic Photography."

130. The sources of the scientific photographs included Rheinisches Mineralien-Kontor F. Krantz, the Röntgeninstitut der photographischen Lehranstalt [des Lette-Vereins?] in Berlin, and the Techno-Photographisches Archiv in Berlin.

131. Eskildsen, "Fotokunst statt Kunstphotographie," 10.

132. No author, "Unter uns.", 101.

133. Kállai's references to obscure photographers such as the Spaemann and Straub team in both his review of the show and in this article, as well as other coincidences, make this clear. Kállai, "Malerei und Photographie," *i10* 1, no. 4 (April 1927): 148-157.

134. One might speculate that Kállai was involved in organizing the Itten-Schule show, but there is no documentation to prove this, and despite the extent to which his writing and interests prefigure it, his critical comments on the installation make this unlikely.

135. For these texts in English, see Christopher Phillips, ed., *Photography in the Modern Era* (New York: The Metropolitan Museum of Art and Aperture, 1989), 94ff. Moholy replied as well. See also the marginal notes to Kállai's article in his own copy of *i10*, now in the library of Hattula Moholy-Nagy. On this controversy, see Forgács, "Seifenblasengleich."

136. Ernst Kállai, "Painting and Photography" in Roswitha Fricke, ed., *Bauhaus Photography* (London and Cambridge, Mass.: The MIT Press, 1982), 133.

137. *Ibid.*, 134.

138. Ernst Kállai, "Malerei und Film," *Sozialistische Monatshefte* 63, no. 3 (March 1926): 168.

139. See Kállai, "Malerei und Film," 165. See also his review of Walter Ruttmann's *Berlin, Symphonie der Grosstadt* in *Sozialistische Monatshefte* 72 no. 9 (September 1930): 943, in which he writes about the possibilities of film: "[Der Film] hat, wie jedes andere Gestaltungsmittel, ihre besonderen Grenzen. Aber innerhalb dieser Grenzen ist heute bereits ein unabsehbarer Reichtum schöpferischer Kombinationen, sind organisch-lebendiges Wachstum, stetes Aufblühen und volles Ausschwingen tiefster innerer Notwendigkeit möglich."

140. Kállai, review of Karl Blossfeldt's *Urformen der Kunst*, *bauhaus* 3, no. 1 (January 1929), 27. The review is unsigned, but we know from its style, its critique of "magischer Realismus," and from the fact that unsigned articles in *bauhaus* derived from the pen of the *Schriftleiter*, that Kállai was the author. The "Schelpennummer" of *Wendingen* no. 8/9 (1923), had texts by Roland Holst and Th. Wijdeveld, and photographs by Bernard Eilers and J. B. Polak. Kállai would in any case have been informed of the *Wendingen* photographs through Moholy-Nagy's *Malerei, Photographie, Film* (1925), which reproduced two of Polak's x-ray photographs of sea shells from this issue. (pp. 61, 64) If Kállai was a regular reader of *Wendingen*, he would also have seen the special "Kristallen" issue, no. 11/12 (1924).

141. Kállai, review of "Die Welt ist schön," *bauhaus* 3, no. 2 (April-June 1929): 27.
142. Ernst Kállai, "Schöne Photos, billige Photos," *Die Weltbühne*, 25, no. 46 (1929). By this time -- perhaps as a result of Kállai having accepted the job Moholy-Nagy had just vacated as editor of *bauhaus*, and as a result of his sometimes critical views of Moholy's art -- Kállai and Moholy-Nagy seem no longer to have been friends.
143. *Ibid.*, 736.
144. *Ibid.*, 736-7. See also Kállai's unsigned "nachträgliches zur foto-inflation," *bauhaus* 3, no. 3 (October-December 1929): 20. This, and Renger-Patzsch's "hochkunjunktur" which follows, suggests that Kállai was in direct contact with Renger-Patzsch. The unsigned laudatory review of Gräff's book *Es kommt der neue Fotograf* in *bauhaus* 3, no. 3 (July-September 1929): 31, is likely by Kállai.
145. Ernst Kállai, "Bildhafte Photographie," *Das neue Frankfurt* no. 3 (1928): 42-49. In English: "Pictorial Photography," Translated by Joel Agee, in: Phillips, ed., *Photography in the Modern Era*, 119.
146. On the make-up of the Selection Committee: Karl Steinorth, "Die Internationale Werkbundaustellung 'Film und Foto' und ihre Organisation," introductory essay to the extended reprint of the catalogue of the show: *Internationale Ausstellung des Deutschen Werkbundes Film und Foto Stuttgart 1929*, Karl Steinorth, ed., (Stuttgart: Deutsche Verlags-Anstalt, 1979), unpag. See also the "Gliederungsplan" on page 10 of the catalogue facsimile.
147. See Gustav Stotz in his statement "Werkbund-Austellung 'Film und Foto' Stuttgart 1929" *Das Kunstblatt* (January 1929), 154. On this, see also Steinorth, *Ibid.*, unpag, and the "Gliederungsplan" in the exhibition catalogue of the show, in the facsimile edition edited by Karl Steinorth, page 10.
148. While we cannot discuss this aspect of the FIFO here, I wish to point out that Richter's inclusion of Mol's microscopic films in the program, effected a parallel aestheticization of scientific film.
149. Eleanor Hight writes that "Moholy's exact role in the selection and organization of the over one thousand photographs in Fifo is unclear, but his influence seems to have been substantial. (Hight, *Picturing Modernism: Moholy-Nagy and Photography in Weimar Germany*, {Cambridge, Mass.: MIT Press, 1995}, 203.) Lusk sees Moholy as the "künstlerische Leiter" of the show, though she does not document her statement. (Monta-

gen ins Blaue, 156). Ute Eskildsen notes that while Moholy-Nagy was not an official member of the selection committee, he played an important role in the selection process, and that he personally chose many of the works for the show. (Eskildsen, "Fotokunst statt Kunstphotographie," 14) Steinorth writes: "als den 'programmatisch' einflussreichsten Mitarbeiter für die Ausstellung verpflichtete Stotz... Moholy-Nagy." (Op. cit., unpag.)

150. Hight, *Picturing Modernism*, x, 203; and catalogue of the Film und Foto Ausstellung, Stuttgart, unpag., quoted in Eskildsen, "Fotokunst statt Kunstfotografie," 14. This material formed the basis for Franz Roh's volume on Moholy-Nagy's photography: *Moholy-Nagy: 60 Fotos* (Munich: Albert Langen, 1930).

151. Eskildsen, "Fotokunst statt Kunstphotographie," 14 and "Gliederungsplan" in the facsimile of the exhibition catalogue, edited by Karl Steinorth, p. 10. This Gliederungsplan implies that the Berlin staff were the "Mitarbeiter" for Germany, with equal responsibility for the show as the foreign advisors, but this could not have been the case since most of the material was German, and since Baur was the head of the Werkbund as a whole, and Seeger was its permanent staff member. As we see below, furthermore, Moholy also played more than a merely local role. Seeger's memory that the "Vorbereitungszeit für die 'Fifo' [war] von höchstens 1 1/2 Jahren" indicates that the show was conceived around the time of the "Neue Wege der Photographie" exhibition in Jena in 1928.

152. Hans Hildebrandt, *Atelier des Photographen* 36, no. 5 (1929): 49. Quoted in Karl Steinorth, op. cit., unpag.

153. Hans Hildebrandt, "Die FIFO in Stuttgart," *Photographische Rundschau und Mitteilungen* 66, no. 10 (1929): 211 and Steinorth, "Die Internationale Werkbundaustellung 'Film und Foto' und ihre Organisation," unpag.

154. Hildebrandt, "Die FIFO in Stuttgart," 211.

155. Ibid.

156. "Zum Artikel über die Stuttgarter Ausstellung," *Photographische Rundschau und Mitteilungen* 66, no. 11 (1929): 245, reprinted in Eskildsen and Horak, *Film und Foto der zwanziger Jahre*, 169.

157. Prodest, "Werkbund-Ausstellung 'Film und Foto', Stuttgart 1929," *Photographie für Alle* 25, no. 15 (1 July 1929): 198.

158. In his programmatic article on the exhibition published several months before it opened, Stotz does not explicitly indicate that Moholy-Nagy played a leading role in curating

the show. See Stotz, "Werkbund-Ausstellung 'Film und Foto' Stuttgart 1929," 154 and the introduction to the exhibition catalogue, "Die Ausstellung," in the facsimile of the catalogue, edited by Karl Steinorth, pp. 11-12.

159. Rudolf Müller-Schönhausen, "Stuttgarter Betrachtungen mit Streiflichtern auf die Münchener Schule," *Der Photograph* no. 53 (2 July 1929): 209.

160. In his very well-informed article "Werkbund-Ausstellung 'Film und Foto,' Stuttgart 1929." Prodest refers to the FIFO as a showcase for the "neue Sachlichkeit." (p. 910) On these terms see Hight, *Picturing Modernism*, 97-99.

161. Stotz' theoretical statements are clearly indebted to Moholy's writings. (Karl Steinorth, *op cit.*, unpag.) Compare, Stotz, "Werkbund-Ausstellung 'Film und Foto' Stuttgart 1929," 154 and the introduction to the exhibition catalogue, "Die Ausstellung," in the facsimile of the catalogue, edited by Steinorth, pp. 11-12, to any of Moholy-Nagy's theoretical photographic writings of the mid 1920s.

162. Moholy-Nagy originally reproduced this photograph in *Malerei, Photographie, Film* (1925), 101. See Lusk, *Montagen ins Blaue*, 156-57. Photographs of the reflective surfaces of metallic spheres became common at the Bauhaus around 1929. See for example, Roswitha Fricke, ed., *Bauhaus Photography* (Cambridge Ma.: MIT Press, 1985) for a good number of examples.

163. Quoted in Prodest, "Werkbund-Ausstellung 'Film und Foto,' Stuttgart 1929," published in *Photographische Industrie* 27, no. 35 (28 August 1929); 911 and *Photographie für Alle*; re-quoted in Eskildsen, "Fotokunst statt Kunstphotographie," 9. The translation is my own.

164. *Ibid.*

165. Quoted in Matties-Masuren, "Zur Werkbund-Ausstellung 'Film und Foto' in Stuttgart," *Photographische Chronik* 36, no. 24 (11 June 1929): 226.

166. Prodest, "Werkbund-Ausstellung 'Film und Foto'" *Photographie für Alle*: 199. That Moholy's point was not entirely correct, is discussed by contemporary critics and by Ute Eskildsen, in "Fotokunst statt Kunstphotographie," 68-69.

167. Prodest, "Werkbund-Ausstellung 'Film und Foto,'" *Photographische Industrie*: 911,

168. While a detailed list of what images were shown was lacking for Raum 1 alone at the Stuttgart showing of FIFO (only the sources were listed), the catalogue of the Vienna

showing of FIFO did include a more detailed list of works shown. See pp. 49-50 in the facsimile edition of the Stuttgart catalogue and the relevant pages of the Viennese catalogue in the same facsimile volume. (Steinorth, ed.) Also: Karl Blossfeldt, *Urformen der Kunst*, Karl Nierendorf, intr. (Berlin: Ernst Wasmuth, 1928).

169. Mathies-Masuren, "Zur Werkbund-Ausstellung," 226. For a discussion of this press reaction to Raum 1, see "Raum 1" in Ute Eskildsen and Jan Horak, eds., *Film und Foto der zwanziger Jahre: Eine Betrachtung der internationalen Werkbund-Ausstellung "Film und Foto" 1929* (Stuttgart: Hatje, 1979), 68-70.

170. "F.M.", Review of the exhibition *Film und Foto, Deutsch...* [illegible] (1 June 1929), no page number. In the Hannah Höch Archive of the Berlinische Galerie, Berlin. There is no review by "F.M." with a date of 1 June listed in Eskildsen and Horak's list of selected reviews of the *Film und Foto* exhibition in their *Film und Foto der zwanziger Jahre*, 202.

171. Prodest, "Werkbund-Ausstellung 'Film und Foto'" *Photographie für Alle*: 199.

172. Eskildsen has suggested that the book acted as a model for Raum 1. "Fotokunst statt Kunstphotographie," 15. Moholy installed Raum 1 at the Berlin showing as well. See his postcard to Erich Stenger of 17.7.1929 (Stenger Nachlass, Agfa Foto-Historama, Cologne) and page 8 of the Berlin catalogue of "Fifo."

173. "Historische Einführung," Documentary photograph in the Staatliche Museen Preussischer Kulturbesitz, Kunstbibliothek, Berlin. Thanks to Janos Frecot and Inka Graeve at the Berlinische Galerie for showing me a copy of this photograph.

174. Hight, *Moholy-Nagy: Photography and Film in Weimar Germany*, 42. See also Hight, *Picturing Modernism*, 206-07.

175. In *Picturing Modernism*, Hight introduces this translation, which more accurately reflects the gendered meaning of the work than does the traditional translation *Once a Chicken, Always a Chicken*. (p. 165) See Lusk, *Montagen ins Blaue*, 82-83, 136-37, 126-127.

176. Hight, *Picturing Modernism*, 104ff.

177. Prof. Spörl, "Was sagt uns die 'Fifo'?" *Der Photograph* no. 50 (21 June 1929): 197.

178. Matthies-Masuren, "Zur Werkbund-Ausstellung 'Film und Foto' in Stuttgart," 227. The translation is my own.

179. E. Haceel, "Bemerkungen zu 'Film und Foto' in Stuttgart," *Photographische Chronik* 36, no. 23 (4 June 1929): 215.

180. Ludwig Neundörfer, "Photographie - Die Bildkunst der Gegenwart," *Kölnische Volkszeitung* (23 June 1929), in Eskildsen and Horak, eds., *Film und Foto der zwanziger Jahre*, 168.

181. Walter Rietzler, "'Form', Foto und Film," *Die Form*, no. 14, 1929, reprinted in *Die Zwanziger Jahre des Deutschen Werkbunds* (Giessen/Lahn: Anabas and Berlin: Werkbund-Archiv, 1982), 147 ff.

182. On Atget, see Rosalind E. Krauss, "Photography's Discursive Spaces," in: *The Originality of the Avant-Garde and Other Modernist Myths* (Cambridge: The MIT Press, 1986), 144-50.

183. In his article "Werkbund-Ausstellung 'Film und Foto,' Stuttgart 1929." Prodest wrote that the FIFO "übertrifft in weiten Ausmasse das, was kurz vorher von anderer Seite, vom Folkwang-Museum in Essen, erreicht worden ist." (p. 910) While Steinorth assumes that Dexel's exhibition inspired Stotz to conceive of this show, he also holds that the Essen show was so different that no influence can be assumed. (Steinorth, op. cit., unpag.)

184. He opposed, however, what he saw as the apolitical stance of the de Stijl artists. See Kállai, "Korrektúrát (A de Stijl figyelmébe)" [A correction (to the attention of de Stijl)] *Ma* 8, no. 9-10 (1 July 1923): unpag.

185. See particularly Kállai's Klagesian references to "racial psychology," the "demonology of primitive folk art" and "intuitive childrens' drawings [as] essential manifestations of life, such as dance, play, crying and laughing," in "Német és japán gyermekrajzok" [German and Japanese childrens' drawing] (1922) *Magyar Pedagógia* no. 1-6 (1925): 37-8 and his review of Hans Prinzhorn's *Bildnerei des Geisteskranken* (1922) in "Káprázat és törvény" *Ma* 9, no. 1 (15 September 1923): 11. On the question of "national characteristics," see also Monika Wucher, "Zwischen 'Internationalismus' und 'nationaler Identität': Aspekte der Kállai-Rezeption," *Kritische Berichte* 19, no. 2 (1991): 54-61. On the *lebensphilosophisch*/Neo Vitalist basis of Kállai's concept of *életesség* [vitality], see Chapter One.

186. See, e.g., Forgács, "New Perspectives on Ernő Kállai's Concept on Constructivism," *Acta Historia Artium Hungariae* 35 (1990-92): 27.

187. Ernő Kállai, "E-T-I-K-A?" [E-T-H-I-C-S?] *Ma* 9, no. 2 (November 1923): unpag.

188. Ernő Kállai, "Wilhelm Lehmbruck," *Ars Una* 1, no. 3 (December 1923): 92-99.
189. Ernő Kállai, "Aurel Bernáth," *Der Sturm* (June 1924); Kállai, "Josef Egry" *Jahrbuch der Jungen Kunst* (1924): 245-6.
190. Ernő Kállai, "Ladislaus Moholy-Nagy," *Jahrbuch der Jungen Kunst* (1924): 189.
191. Ernő Kállai, "Ideológiák alkonya. Kunst kommt von Können." 365 no. 1 (April 1925): 19-20.
192. Ibid. This new critical perspective is first put into operation in his article on Muche. Kállai, "Georg Muche," *Der Cicerone* 17, no. 12 (June 1925): 584-91.
193. Forgács, "New Perspectives on Ernő Kállai's Concept on Constructivism," 30.
194. Kállai, "Organisation, Natur, Gestaltung," *Offset- Buch- und Werbekunst* no. 6 (1925): 343; "Architekturális leszerelés (Egy magyar építész weimari kiállításához)" [Architectural disarmament (on the Weimar exhibition of a Hungarian architect)] *Magyar Művészet* [Hungarian Art] no. 3 (1926): 173-4. "Die Wohnung," *Sozialistische Monatshefte* 63, no. 5 (May 1926): 322.
195. Kállai, "Organisation, Natur, Gestaltung," 343. C.f. also his praise of Muche's organic work in "Georg Muche," 585.
196. On his earlier tendency to "vitalize" Constructivism, see Chapter One. An important source for Kállai at this time would have been Hans Haustein's "Biologie" column in *Sozialistische Monatshefte*, a journal in which Kállai was himself publishing by this time. See, e.g., his use of the term "Neo-Vitalismus" in "Biologie," *Sozialistische Monatshefte* 63, no. 3 (March 1926): 180. This article would also have given Kállai a complete history going back to antiquity of the Mechanism-Vitalism debate, and of the debate in the 20th century up to his time. On Neo-Darwinism, see Haustein, *Sozialistische Monatshefte*, 64, no. 6 (June 1927): 490-91. In fact, judging by all the articles where he discusses Ernst Haeckel, Jakob von Uexküll, Hans Driesch, Edgar Dacqué, evolution, Lamarck, Darwin, Genetics, etc., Haustein seems to have been an important source for Kállai on biocentrism during the mid to late 20s. Note that Kállai seems to have been a regular reader of *Die Form*, as well as of Franz Kollmann's book *Schönheit der Technik*. Franz Kollmann, *Schönheit der Technik* (Munich: Albert Langen, 1928). Source: *bauhaus* 1928, no. 4: 27.

197. Kállai, "Architekturális leszerelés." He also calls for an organic-functionalist approach to housing design in "Die Wohnung," 322. On this 'drive,' see below.
198. Kállai, in his 1927 response to a letter written to him by Georg Neitzel: "Kállais Antwort," *Das Kunstblatt* 11 (1927): 313.
199. Kállai, "Der Plastiker Mataré," 68.
200. Kállai, "Ausstellung der Kunstschule Johannes Itten, Berlin," 36.
201. Kállai, "Der Plastiker Mataré," 67.
202. Quoted by Ernst Jäckh in "The New Era," *Die Form* (1930): 303.
203. Hannes Meyer assumed the directorship of the Bauhaus April 1, and though he had originally thought of Schlemmer in this role, he soon invited Kállai to act as Moholy-Nagy's replacement as editor of *bauhaus*, and as the school's publicist. (In his letter to Willi Baumeister of 15.2.1928 Schlemmer mentions that Meyer intends his duties in the new Bauhaus to include "publishing" and "public relations" in addition to teaching. See Schlemmer, *The Letters and Diaries*, 226. In a letter to Baumeister of 30.4.1928, Meyer mentions having hired Kállai to be the "Pressereferent" of the Bauhaus "zum methodischen Aufbau der Bauhauspropaganda." Magdalene Droste, "Unterrichtsstruktur und Werkstattarbeit am Bauhaus unter Hannes Meyer" in Werner Kleinerüschkamp and Werner Möller, eds., *Hannes Meyer 1889-1954. Architekt Urbanist Lehrer* (Berlin: Ernst & Sohn, 1989), 140). Kállai arrived in Dessau by early May at the latest, for he was staying with the Schlemmers on May 7. Ludwig Grote referred to him as Meyer's "propagandist." See Grote in Eckhard Neumann, ed., *Bauhaus und Bauhäusler: Bekenntnisse und Erinnerungen* (Bern: Hallwag, 1971), 164.
204. Quoted by Tanya Frank in her "Nachwort" to Frank, ed., Kállai, *Vision und Formgesetz: Aufsätze über Kunst und Künstler 1921-1933* (Leipzig: Gustav Kiepenheuer, 1986), 260. The undated letter (in the Bauhaus-Archiv, Berlin) is probably from early 1929.
205. See Meyer's letter to Willy Baumeister, Basel, 13.2.1927. Reprinted in Kleinerüschkamp and Möller, eds., *Hannes Meyer, 1889-1954*, 166-7.
206. One can trace the mood of the Bauhaus through Schlemmer's diary and correspondence. Schlemmer and Meyer started out as friends after Meyer arrived at the Bauhaus in 1927. At first Schlemmer greeted his appointment as director cautiously. As

late as 11 November 1928 Schlemmer wrote to Otto Meyer-Amden that "Hannes Meyer [is] well disposed and helpful but also demanding." *The Letters and Diaries*, 235. In his February 1929 diary entry, Schlemmer refers to "at long last another party at this troubled Bauhaus." (p. 238) By the time of his 6 March 1929 letter to Baumeister, Schlemmer writes that "I am ready to leave. People -- the students and I, too -- are dissatisfied with Hannes because of his boorish behaviour and tactlessness. The atmosphere in the house is not good," and he was referring to his attempts to get a job in Breslau. (p. 240) On June 9 he wrote to Otto Meyer-Amden that "Given the mood here, I can only say thank God [that the Breslau Academy is interested in hiring him]. I have never felt more alienated from the Bauhaus than now, thank's to Meyer's total failure as director." (p. 244)

207. Paul Klee, "Exakte Versuche im Bereich der Kunst," *bauhaus* 2, no. 2/3 (1928): 17. On Schlemmer's wariness, e.g., see *The Letters and Diaries of Oskar Schlemmer*, 226ff.

208. See *Oskar Schlemmer IV '29, im Meisterrat '28*, 11 silver contact prints and enlargements mounted on card, 29.7 X 41.7 cm. in: *Josef Albers. Photographien 1928-1955* (Cologne: Kölnischer Kunstverein, 1992), plate 9. Kállai resigned from his job as editor of *bauhaus* around early July, effective 1 October (letter, Kállai to Naum Gabo, 7.7.1929, Bauhaus Archiv, Berlin, inv. no. 3653/10). This resignation was tendered around the time that Schlemmer accepted a position at the Breslau Academy. (See *The Letters and Diaries of Oskar Schlemmer*, 240ff.) Kállai left Dessau sometime after 6 October 1929, since postcards sent by Kállai to Elizabeth Richter (the wife of Naum Gabo) on the occasion of her birthday are dated "6.10-.29," and signed "Kállai. Dessau (leider), Bauhaus (leidere-r)," indicating that he was anxious to leave Meyer's Bauhaus and return to Berlin. (Bauhaus Archiv, Berlin, inv. nos. 3653/11, 3653/3, 3653/12 and 3781/4) He may well have stayed on, however, until mid October, to see Fritz Kuhr's exhibition and hear the Carnap lecture series (on these, see below) and to deliver the last issue of *bauhaus* edited by him -- which appeared November 15 -- to the printer. Surprisingly, despite his admiration for Klee, Kállai does not seem to have been close to him at the Bauhaus. (Conversation with Alexander Klee.) Perhaps this was because -- like Grote -- Klee saw him as Meyer's man.

209. Hannes Meyer, "bauhaus und gesellschaft" *bauhaus* 3, no. 1 (January 1929), 2. In his letter to Lord Mayor Hesse of Dessau, written at the time of his dismissal as Bauhaus director in August of 1930, Meyer echoed these same ideas: "I fought constructively under my motto: all life is a striving after oxygen + carbon + starch + protein. Therefore, all design must be anchored in this life. Building is a biological and not an

aesthetic process." (Schnaidt, ed., *Hannes Meyer...*) These ideas echo those expressed by K. von Meyenburg in his article "kultur von pflanzen, tieren, menschen" in *bauhaus* no. 4 (24 October 1927), in which he writes "die sonne liefert die energie und die atmosphäre liefert die vier gase: kohlenstoff, sauerstoff, wasserstoff und stickstoff, aus C,O,H,N erbaut sich das leben mit sonnenkraft fast restlos..." (p. 10) Von Meyenburg, a fellow Basler much appreciated by Raoul Francé, exercised a strong influence on Meyer's organic mode of thinking. Indeed, Meyer invited him to lecture at the Bauhaus, which he did in 1929. (On this, see below.)

210. Kállai, "Bauhauspedagógia, Bauhausépitészeti" [Bauhaus pedagogy, Bauhaus architecture] *Tér és Forma* [Space and Form] 1 (December 1928): 320.

211. Stefan Kraus, "bauen ist ein biologischer vorgang -- Hannes Meyer," in Wulf Herzogenrath and Stefan Kraus, eds., *Bauhaus-Utopien: Arbeiten auf Papier* (Stuttgart: Edition Cantz, 1988), 279.

212. Hoffmann, "Hannes Meyer -- ökologische Aspekte seiner Lehre und deren Auswirkung." See also Kállai "zur einföhrung" in *das bauhaus dessau* exh. cat. (Basel: Gewerbemuseum, 1929), unpag. Also: Herzogenrath and Kraus, *Bauhaus Utopien*, 24-25, 279-80; Magdalene Droste, *bauhaus 1919-1933* (Berlin: Benedikt Taschen Verlag, 1990), 172, where Droste quotes Meyer in the *Anhalter Anzeiger* (25.6.1929): "Durch soziologische und biologische Vorträge und Kurse prominenter Persönlichkeiten soll diesen Gebieten am Bauhaus mehr Eingang verschafft werden." On the Bauhaus lecture series, see below.

213. Schlemmer, Letter to Tut Schlemmer of 1 March 1928, in: *The Letters and Diaries*, 229.

214. Schlemmer, letter to Willi Baumeister of 15 February 1928 in *Ibid.*, 226-7.

215. Schlemmer, diary entry of the end of May 1928, in *Ibid.*, 233.

216. Schlemmer, diary entry of 26 March 1928, in *Ibid.*, 231.

217. Oskar Schlemmer, "unterrichtsgebiete. der mensch," *bauhaus* 2, no. 2/3 (1 July 1928): 22-4.

218. *Ibid.*, 23.

219. This view may also have been affected by Prinzhorn's related psychology, which Meyer and Kállai were promoting at the time. C.f. Huch and Hans Prinzhorn, *Leib-Seele-Einheit: Ein Kernproblem der Psychologie* (Potsdam/Zurich: Müller &

Kiepenheuer/Orell Füssli, 1927). Schlemmer makes his debt to Huch clear in a sketch reproduced in Heimo Kuchling, ed., *Oskar Schlemmer: Der Mensch. Unterricht am Bauhaus. Nachgelassene Aufzeichnungen* (Mainz/Berlin: Florian Kupferberg, 1969), 31. On Schlemmer and Huch, see Herzogenrath and Kraus *Bauhaus-Utopien*, 177 and Peter Hahn, *Experiment-Bauhaus: Das Bauhaus-Archiv zu Gast im Bauhaus Dessau* (Berlin: Bauhaus-Archiv, 1988), 52. See also Ricarda Huch, *Vom Wesen des Menschen: Natur und Geist* (Prien a. Chiemsee: Kampmann & Schnabel, 1921), 1. Karin von Maur is mistaken in supposing that Schlemmer's interest in Huch took him "in der Nähe von Theosophie." von Maur, *Oskar Schlemmer* (Stuttgart: Staatsgalerie Stuttgart, 1977), 260. On Ricarda von Huch as a Monist, see Monika Fick, *Sinnenwelt und Weltseele. Der psychophysische Monismus in der Literatur der Jahrhundertwende* (Tübingen: Max Niemeyer, 1993). In the special theatre issue of *bauhaus* no. 3, Schlemmer reviewed Fritz Giese's *Körperseele*, an evidently Monist study of "body/soul relationships with respect to modern gymnastics and expressive dance." Janice Joan Schall, "Rhythm and Art in Germany, 1900-1930" (Ph.D. dissertation, University of Texas at Austin, 1989), 347-8.

220. Schlemmer, letter to Tut Schlemmer of 1 March 1928. On Haeckel, see also Kuchling, ed., *Oskar Schlemmer, Der Mensch*, p. 71-72. Both Haeckel's *Natur und Mensch* (1920) and Ostwald's *Grosse Männer* are included on the natural scientific reading list.

221. Kuchling in Schlemmer, *Der Mensch*, 133. Among the books listed on the related reading list is Oswald Spengler's *Untergang des Abendlandes*. (p. 142)

222. Six of thirteen items, to be precise. See Kuchling, ed., *Oskar Schlemmer: Der Mensch*, 142. On the Monistic-Dualistic topic, see pp. 144-5. The list, probably compiled in 1928, includes Klages' *Ausdrucksbewegung und Gestaltungskraft* (1923); *Mensch und Erde* (1920), *Vom kosmogonischen Eros* (1922), *Vom Wesen des Bewusstseins* (1926); and Carus' *Psyche* (1864) and *Symbolik der menschlichen Gestalt* (1925). As Prinzhorn points out in *Leib-Seele-Einheit*, Klages wrote the introduction to the re-edition of *Psyche* (pp. 189-90). Surprisingly, Schlemmer does not include Prinzhorn's history of Monist psychology *Leib-Seele-Einheit*, which appeared in 1927 and was reviewed in *Bauhaus* very positively by Ernő Kállai. On this, see below. On Goethe, Carus and their effect on Klages in this book, see pp. 54ff.

223. Kuchling, "Oskar Schlemmers Begriff vom Menschen," in Schlemmer, *Der Mensch*, 25-6.

224. We know from Naum Gabo's correspondence with Kállai, preserved in the Bauhaus-Archiv, Berlin, that Kállai first suggested Gabo's lectures at the Bauhaus, held 2-9 November 1928. It is also likely that Kállai proposed his compatriot Pál Forgó's Bauhaus lecture on "Neues Bauen in Ungarn," held 7 December 1928. (Kállai had given Forgó's book *Új építészet* [New architecture] a mixed review on p. 27 of the 1 October 1928 issue of *bauhaus*.) Thus it seems that Kállai took on an active role in organizing the Bauhaus lectures. On the series in general, see Klaus-Jürgen Winkler, *Der Architekt Hannes Meyer: Anschauungen und Werk* (Berlin: VEB Verlag für Bauwesen, 1989), 122-4.

225. *bauhaus* 3, no. 1 (January 1929): 25. On Neubert's lecture, see Rudolf Neubert, *Mein Artzleben. Erinnerungen* (Rudolstadt: Greifenverlag, 1973 and 1981), 52-53. On the Marxist and Communist component of this series, see Winkler, *Der Architekt Hannes Meyer*, 122-3.

226. *bauhaus* 3, no. 2 (April-June 1929): 26.

227. *bauhaus* 3, no. 3 (July-September 1929): 28. This lecture is also reported to have been on the topic of "Arbeit und Leben" in "Bauhausvortrag" *Anhalter Anzeiger* (8.6.1929). In "Interne Vorträge am Bauhaus" (*Anhalter Anzeiger* 4 June 1928) it is reported that von Meyenburg was to have lectured from 6-8 June, suggesting that he delivered more than one lecture. The anonymous author of "Bauhausvortrag" reported that von Meyenburg criticized Karl Marx's and Taylor's ideas on work, as well as the collectivization of agriculture in the USSR. One must rather -- von Meyenburg is reported to have said -- deal with the whole question of work "von rein biologischen Gesichtspunkten aus." Von Meyenburg's biologicistic materialism is expressed thus in the report: "Biologisch gäbe es keinen Unterschied zwischen dem Kampf untereinander und der Arbeit. Immer handelt es sich um ein Auseinandersetzen einer Materie und um ein Zusammensetzen zu einer anderen, also um einen Umfass des Stoffes." Raoul Francé reproduced images of von Meyenburg working in Francé, *Das Buch des Lebens* (Berlin: Ullstein, 1924), 347 and Francé, *So musst du Leben!* (Dresden: Car Reissner, 1930), 33. C.f. For a clear expression of von Meyenburg's biocentrism, see his "kultur von pflanzen, tieren, menschen," *bauhaus* no. 4 (24 October 1927): 8-9.

228. "veranstaltungen am bauhaus," *bauhaus* 2, no. 4 (1 October 1928): 24.

229. Tanja Frank was the first to point out the deep impression Prinzhorn's ideas made on Kállai, in her afterword to an anthology of Kállai's writings she edited, *Vision und Formgesetz*, 268. C.f. Kállai's adoption of Klages' idea of rhythm as an essential expression of universal vitality. For example, an

important passage on rhythm appears both in Kállai's exhibition catalogue *Vision und Formgesetz. Blätter der Galerie Ferdinand Möller* no. 8 (September 1930), 3-4, and in Kállai's essay "Rythmus in Bildern" in *Die Weltbühne* 26, no. 41 (1930), 554-6: "Der Mensch ist geistige Potenz, Erkennen und Konstrukteur hohen Ranges. Doch er treibt im gleichen Kreislauf von Naturgewalten des Blutes, des Geschlechts und des Hungers, der Keimung und des Todes wie Tier und Pflanze." C.f. the clippings in Kállai's collection: "Takt und Rhythmus. Ludwig Klages in der Kant-Gesellschaft" [no author or date; ca. 1934] *Unterhaltungsblatt der Vossischen Zeitung* (concerning Klages' lecture "Vom Wesen des Rhythmus" held at the Berliner Ortsgruppe of the Kant-Gesellschaft), and Georg Burckhardt, "Geist und Seele," review of vol. 3 of Klages' *Der Geist als Widersacher der Seele*, [no source or date; book published in 1932]. (M.K.Cs. inv. no. MDK-C-I-11/unordered files).

230. Ernst Kállai, "bauen und leben," *bauhaus* 3, no. 1 (January 1929): 12.

231. Ibid.

232. Ibid.

233. Ibid. Prinzhorn's lecture "Leib-Seele-Einheit" was evidently based on *Leib-Seele-Einheit. Ein Kernproblem der neuen Psychologie*, while "Grundlagen der neuen Persönlichkeitspsychologie" seems to have been an early version of the ideas Prinzhorn later expressed in *Persönlichkeitspsychologie. Entwurf einer biozentrischen Wirklichkeitslehre vom Menschen* (Leipzig: Quelle & Meyer, 1932).

234. Hannes Meyer, Typescript of a lecture held in Vienna and Basel, 22.4.1929. Reprinted in Lena Meyer-Bergner, ed. *Hannes Meyer. Bauen und Gesellschaft, Schriften, Briefe, Projekte* (Dresden: VEB Verlag der Kunst, 1980), 62. On this, see also Kraus, "bauen ist ein biologischer vorgang -- Hannes Meyer," 280. For another expression of these ideas, see Meyer's "bauen und gesellschaft," 2. The listing of thinkers (with the omission of Goethe and the addition of Hans Prinzhorn) is more or less Prinzhorn's formulation. See Prinzhorn, *Leib-Seele-Einheit*, 179.

235. On Prinzhorn see: James L. Foy, preface to the reprint of Prinzhorn's *Artistry of the Mentally Ill* (Berlin and New York: Springer Verlag, 1972); Bern Urban, afterword to the reprint of Prinzhorn's *Gespräch über Psychoanalyse zwischen Frau, Dichter und Arzt* (Frankfurt/Main: Suhrkamp, 1981). On Klages, e.g., Hans Eggert Schröder, ed. *Ludwig Klages 1872-1956*, exh. cat. (Bonn: Bouvier, 1972) and Chapter Two.

236. In the original the first quotation reads: "In gradli-
niger Fortsetzung der oben geschilderten Auffassung des 'be-
wusstlos bildenden Lebens' von Goethe und Carus sind für
Klages *alle echten Lebensvorgänge* -- und das will beim Men-
schen sagen: *Erlebnisse -- ihrem Wesen nach unbewusst, zweck-
frei, zwangsläufig, in sich geschlossen.*" The second reads:
"...der noch unzeitgemässen Weltsicherheit von Menschen, die
im Einklang mit den grossen Rhythmen des Naturlaufs und mit
allem lebenden Gebilde sich gefunden hatten." Prinzhorn, *Leib-
Seele-Einheit*, 62 and 72 resp.

237. C.f.: "The despiritualization of the world is not the
outcome of the unfaith of individuals, but is one of the
possible consequences of a mental development which here has
actually led to Nothingness.... Today, as always, art must,
willy-nilly, make Transcendence perceptible, doing so at all
times in the form which arouses contemporary faith. It may
well be that the moment draws near when art will once again
tell man what his God is and what he himself is." Karl Jas-
pers, *Man in the Modern Age* [Die geistige Situation der Zeit,
1931] Eden and Cedar Paul, trans. (New York: Anchor, 1957),
20; 141.

238. On Jung, Kállai would have read Hans Prinzhorn, who
discusses his idea of the "collective unconscious" in *Leib-
Seele-Einheit*: 96-98, 102 ff. Prinzhorn sees some problems
with Jung, but also praises him. Edgar Dacqué's writings also
played a role here. Jung first proposed the "shadow" in his
1918 essay "The Role of the Unconscious." Prinzhorn discusses
Jung in *Leib-Seele-Einheit*, as well as in his 1929 book *Psy-
chotherapy: Its Nature, Assumptions and Limitations*, which
dealt with Freud, Jung and Adler. On Jung and Kállai see also
Oliver Botar, "Ernő Kállai and the Hidden Face of Nature" in
The Structurist, no. 23-24 (1984-85), 79-80. C.f. also the
article which survives among Kállai's collection of newspaper
clippings: Jung, "Lob des Traums" *Unterhaltungsblatt der
Vossischen Zeitung* (29 June 1933). (MTA-MKCs-C-I-11/unordered
material) C.f. also Anne Harrington's discussion of the
demonic in Constantin von Monakow's thought, and of "thanatos"
or the "death instinct" in Freud. See Anne Harrington, *Reen-
chanted Science: Holism in German Culture from Wilhelm II to
Hitler* (Princeton: Princeton University Press, 1996), 83-86.

239. "Chapter 6, "Die Fachwissenschaften und die Lehre von der
Leib-Seele-Einheit," Prinzhorn, *Leib-Seele-Einheit*, 143-62.

240. *Ibid.*, 143-44.

241. See *bauhaus* 3, no. 3 (July-September 1929): 28.

242. See, e.g. Herbert Feigl, *Inquiries and Provocations. Selected Writings 1929-1974*. Robert S. Cohen, ed. (Dordrecht, Boston and London: D. Reidel, 1981), esp. the 1929 "Meaning and Validity of Physical Theories," 116-144.

243. C.f. Feigl's publications: *Theorie und Erfahrung in der Physik* (Karlsruhe: G. Raun, 1929). For an English translation of Chapter III: "Meaning and Validity of Physical Theories," in Robert S. Cohen, ed. *Inquiries and Provocations. Selected Writings 1929-1974* (Dordrecht: D. Reidel, 1981), 116-144. "Zufall und Gesetz," *Wissenschaftliche Jahresbericht der Philosophischen Gesellschaft an der Universität zu Wien* (Vienna, 1927) (a summary of Feigl's Ph.D. dissertation, Vienna, 1928). "Wahrscheinlichkeit und Erfahrung," *Erkenntnis* 1 (1930), 249-259. In English: "Probability and Experience," in Cohen, ed., *Inquiries and Provocations*, 1-7-115. While he did not publish his ideas on "Leib und Seele" at the time, Feigl did publish several studies on the subject later, e.g. "The Mind-Body Problem in the Development of Logical Empiricism" (1950), "Mind-Body, Not a Pseudoproblem" (1960), and "Some Crucial Issues of Mind-Body Monism" (1971), in Cohen, ed. *Inquiries and Provocations*. Feigl remembers Neurath as the person who arranged for his (and Carnap's) lecture series at the Bauhaus. Neurath had himself lectured there the previous fall. Feigl remembers meeting Klee and Kandinsky (he mentions neither Meyer nor Kállai), but says little else about the actual lectures. He writes: "Neurath and Carnap felt that the [Vienna] Circle's philosophy was an expression of the *neue Sachlichkeit* which was part of the ideology of the Bauhaus." If this was the case, then the lectures may not have elicited sympathy from Kállai. "The Wiener Kreis in America" (1969) in Cohen, ed. *Inquiries and Provocations*, 62-63. See also a reference in it to Feigl's letter of 1 July 1929 to Hans Reichenbach concerning his time at the Bauhaus in: Peter Galison, "Aufbau/Bauhaus: Logical Positivism and Architectural Modernism," *Critical Inquiry* 16 (Summer 1990): 718.

244. C.f. Carnap's publications: "Über die Aufgabe der Physik," *Kant Studien* 28 (1923), 90-117; and *Der logische Aufbau der Welt* (Berlin-Schlachtensee: Weltkreis Verlag, 1928). In an English translation by R. A. George, *The Logical Structure of the World* (Berkeley and Los Angeles: University of California Press, 1969). "Der Missbrauch der Sprache" may have been based on any one of a number of publications of the period by Carnap on the problem of language and syntax. On Carnap's views on the lecture series, see Feigl, "The Vienna Circle," in Cohen, ed. *Inquiries and Provocations*, 62-63. On Carnap's visit to the Dessau Bauhaus, see Galison, "Aufbau/Bauhaus" 734-40.

The Vienna Circle's Berlin supporter Hans Reichenbach was also invited to lecture at the Bauhaus, though after Kállai's departure. Reichenbach was invited in the fall of 1929. Neurath was invited in May of 1929 and again in 1930. Galison,

"Aufbau/Bauhaus," 719-20.

245. On Meyer and the controversy around the fine arts at the Bauhaus, see Kersten, "Hannes Meyer und die Kunst der Moderne," 130-3. Also: Jacques Aron, "Hannes Meyer und die Kunstproblematik am Bauhaus" in *Hannes Meyer -- Beiträge zum 100. Geburtstag. Internationales Symposium* (Dortmund: Hannes-Meyer-Geburtstag-Komitée, Fachhochschule Dortmund, Fachbereich Architektur, 1989), 67 and Winkler, *Der Architekt Hannes Meyer*, 126-7. On Teige as Kállai's replacement, see the correspondence between Meyer and Teige reprinted in Kleinerüschkamp and Möller, eds., *Hannes Meyer*, 171.

246. An ignorance of biocentrism and a consequent adherence to the Left-Right taxonomy mars Galison's informative article on the logical positivists and the Bauhaus. Galison elides the connections of the logical positivist circle to the *Monistenbund*. In his first letter to Carnap of 19 October 1923, Otto Neurath refers to Carnap's involvement in the "Freideutschen," but fails to identify this as a reference to the *Freideutsche Jugend* of the German Youth Movement. See pp. 713-4. Galison's attempt to discuss Logical Positivism as "left wing" is subverted by his own discussion of its "Left" (anti-metaphysical) and "Right" ("metaphysical" wings) the "Right-wing" including Schlick and Wittgenstein. (On the logical positivists as spanning the political spectrum from Left to Right despite Galison's tendency to associate them exclusively with the Left, see Galison p. 714.) As a result, Galison absurdly classifies Hans Driesch as "one of the heroes of nationalist philosophy," i.e. -- in this context -- a quasi-Nazi, for his metaphysical organicism (p. 733-4) despite Driesch's longstanding position as one of the "Circle of Friends of the Bauhaus." (See, e.g., the list in *bauhaus* 3, no. 2 {April-June 1929}: 27.) Because of his failure to allow for a Leftist biologism, not surprisingly Galison -- as others -- seeks to erase traces of Hannes Meyer's radical biologism. See, e.g., Galison's studied omission of Meyer's references to "biology" and "life" in his quotation from Meyer's "Bauen," p. 717. Combined with the decidedly metaphysical origins of Kandinsky's Elementarism, and the Francéan origins of Moholy-Nagy's, all this underlines the fundamentally mistaken nature of Galison's thesis that "the modernist construction of form out of elemental geometric shapes and colors is a correlate of the verbal development of theories out of logic and elementary bits of perception." (p. 749) His thesis crumbles on the untenable foundation of the Bauhaus as "scientistic and machine-centred." (p. 749)

247. Kleinerüschkamp and Möller, eds., *Hannes Meyer*, 178.

248. Howard Dearstyne's notes on some of these lectures are reprinted in Hans M. Wingler, ed., *The Bauhaus* (Cambridge Mass.: The MIT Press, 1969), 160. On Krüger as a "holist" psychologist, see Harrington, *Reenchanted Science*, xxiv, 124-8. On Krüger as a supporter of Hitler, see pp. 177-8. On these lectures see also Winkler, *Der Architekt Hannes Meyer*, 123. On other lectures after Kállai left, see Meyer's letter to Erwin Redslob of 20 August 1930, reprinted in Kleinerüschkamp and Möller, eds., *Hannes Meyer*, 177-8.

249. Neubert, *Mein Artzleben*, 53. After one of Carnap's lectures, discussions continued until 1 AM. (Galison, "Aufbau/Bauhaus," 736). Von Meyenburg's lecture was also reported to have been a success. *Anhalter Anzeiger* (8.6.1929).

250. Galison, "Aufbau/Bauhaus," 710.

251. On Prinzhorn, Klages, biocentrism and the Bauhaus, see Chapter Three.

252. Kállai, "goldene ketten -- eiserne ketten," *bauhaus* 3, no. 1 (January 1929): 14.

253. On this see Tanja Frank, "Hannes Meyer und Ernst Kallai. Eine freundschaftliche Kontroverse am Bauhaus," *Bildende Kunst* 33, no. 10 (1985), 475-6 and Frank, "Nachwort," *Vision und Formgesetz*, 260-3.

254. On Kuhr's public statement against Gropius' resignation and his opposition to Meyer, see *The Letters and Diaries of Oskar Schlemmer*, 225.

255. For Kállai's critique of what developed into Stalinism, see his "goldene ketten -- eiserne ketten" and "Das Bauen und die Kunst," 8. This prescient knowledge of Stalinism likely derived from János Mácza, who had visited the Dessau Bauhaus during the summer of 1928, and was Kállai's guest there. Mácza was a prominent figure on the Moscow cultural scene, and would have been very well informed on developments there. Meyer (with whom Mácza later became friends during his Moscow years), accepted this totalitarianism, and soon moved to the Soviet Union, remaining a Stalinist even after his expulsion from the USSR. See: Karin Carmen Jung, "Planung der sozialistischen Stadt. Hannes Meyer in der Sowjetunion 1930-1936"; and Winfried Nerdinger, "'Anstossiges Rot' Hannes Meyer und der linke Baufunktionalismus -- ein verdrangtes Kapitel Architekturgeschichte," both in Kleinerüschkamp and Möller, eds. *Hannes Meyer*, 288-9 and 27-28, respectively. On Mácza, see the autobiographical fragment in János Mácza, *Eszmeiség - avantgarde - művészet* [Intellectualism -- avant-garde -- art] vol. 2 (Budapest: Petőfi Irodalmi Múzeum, n.d. [1985], 357.

256. See Kállai's critique of Moholy's set designs for the tales of Hofmann as pretty and superficial in "Das Bauen und die Kunst," 15-16.

257. Mattenklott, *Karl Blossfeldt*, 57, note 17. The aestheticization -- and commodification -- of these images had begun in the mid 20s, with gallery owner and publisher Karl Nierendorf's exhibition and subsequent publication of Blossfeldt's turn of the century plant close-ups in 1925 and 1928, respectively. It is possible that it was Moholy's book *Malerei, Photographie, Film* of 1925, which gave Nierendorf the impetus to recontextualize Blossfeldt's work. Eugène Atget's "discovery" by Man Ray and the Surrealists in 1925, and his inclusion in the FIFO exhibition, was a process exactly analogous both temporally and conceptually. See Krauss, "Photography's Discursive Spaces," 144. Blossfeldt's revival and success is coincidental with the aestheticization of scientific photography and in a sense it was a part of this trend, since previous to it they would have been seen as akin to botanical photographs. Indeed, as Mattenklott has shown, Blossfeldt's photographs were meant as tools in the applied arts rather than as an aesthetic undertaking.

258. *bauhaus* 3, no. 3 (November 1929), 28. He would also have seen Blossfeldt's photographs in Raum 1 of the FIFO. It is possible that Kállai arranged for the showing of Blossfeldt's photos at the Bauhaus.

259. See: Kállai, "Dämonie der Satire," *Das Kunstblatt* 11, no. 6 (1927): 97-104.

260. Nierendorf, introduction to Blossfeldt, *Urformen der Kunst*, Reprinted in English translation in: Mellor, ed., *Germany. The New Photography 1927-33*, 19.

261. Note that in the second issue of *bauhaus* which Kállai edited, there was a half-page advertisement for *Die Literarische Welt*, the only one of its kind in *bauhaus*. See *bauhaus*, 2, no. 4 (1 October 1928): 27. It was in the next, January 1929 issue that Kállai's review of Blossfeldt's book appeared.

262. Benjamin, "Neues von Blumen." Translation by Oliver Botar. The available English translation in Mellor, ed., *Germany. The New Photography 1927-33* (p. 21) was for the most part unusable.

263. I am here quoting the translation from *ibid.*

264. Detlef Mertens, "The Enticing and Threatening Face of Prehistory: Walter Benjamin and the Utopia of Glass," *Assemblage* 29, 6-23 (1996): 18.

265. See Werner Feld, "Walter Benjamins Beziehung zu Ludwig Klages," *Akzente* 28 (1981): 279 and Gershom Scholem and Theodor W. Adorno, eds., *The Correspondence of Walter Benjamin, 1910-1940* (Chicago: University of Chicago Press, 1994): 366-7. It may seem risky, even heretical, to call Benjamin "biocentric," but Benjamin's Blossfeldt review is what I would term biocentric, and this subject is at least worth further exploration. Though I find his uncritical acceptance of Georg Lukács's argument for some kind of essential connection between Vitalism and Nazism to be questionable, I appreciate that Richard Wolin has dared to discuss this aspect of Benjamin's complex thinking, particularly his life-long interest in the biocentric philosopher Ludwig Klages. See "Walter Benjamin Today," in Wolin, *Labyrinths: Explorations in the Critical History of Ideas* (Amherst: University of Massachusetts Press, 1995), 55-72.

Given Benjamin's probable importance in inspiring Ernő Kállai's *Bioromantik* conception, it is important to note his Youth Movement roots. Benjamin became an admirer of Klages at the *Freideutsche Jugend's* Hohe Meissner meeting of 1913, after hearing Klages' "Mensch und Erde" speech. (On this early environmentalist speech, see Chapters Two and Three.) Benjamin also befriended Gustav Wyneken, one of the leaders of the Youth Movement, and a principal figure in the *Schulreformbewegung* which, as we saw in Chapter Three, had a strong effect on Moholy-Nagy's pedagogical thinking. Characteristically, he wrote his dissertation on *Der Begriff der Kunstkritik in der deutschen Romantik* (Frankfurt/Main: Suhrkamp, 1973). On Benjamin's participation at the Hohe Meissner, see Corona Hepp, *Avantgarde*, 41. On Benjamin and Klages see also Werner Fuld, "Walter Benjamins Beziehung zu Ludwig Klages," *Akzente* 28 (1981): 274-87 and on Benjamin's affinity with German Romanticism and Paul Klee, see Mark Roskill, *Klee, Kandinsky, and the Thought of their Time: A Critical Perspective* (Urban, Ill.: University of Illinois Press, 1992), 134-5. On Benjamin's admiration for the organicist art historian Siegfried Giedion's writing, see Detlef Mertins, "Walter Benjamin's Tectonic Unconscious," *Architecture New York* 14 (1996): 31.

266. This comparison was made in a special issue of *ReD* on photography, clearly inspired by Moholy-Nagy's *New Vision*. For what I presume to be the editor Karel Teige's comparison made in a caption, see *ReD* 1, no. 6 (1929): 214-15. This issue also included "Architektura hmoty" [The architecture of matter] (pp. 209-210), an article by the Czech physicist and popular scientific writer Vilém Santholzer (1903 - ?) of the Institute of Radiology in Prague, on physicist Max von Laue's X-ray crystallography, i.e. his pioneer imaging of atomic structure, illustrated with microscopic photographs on atomic structure by von Laue. See also Euzem Markalous, "K Mikrofotografiim," *ReD* 1 (1928): 351-52. Connections between Teige and the Bauhaus were especially close during Meyer's directorship. Note,

e.g., the rare reproductions of works by Kállai's protégé Fritz Kuhr in *ReD* 2 (1929): 296 and *ReD* 3 (1929-31): 137. Thanks to Tonya Miouska of Toronto and Hanus Hemola of the National Library, Prague, for information on Santholzer, and to Miouska for translating Santholzer's article.

267. Ernő Kállai, *A természet rejtett arca* [The hidden face of nature], page. "Die Idee," a 1929 coloured monotype by Kuhr which fits this description, is reproduced in Peter Hahn, *Junge Maler am Bauhaus* (exh. cat.) (Munich: Galerie Levante, 1979), unpag. C.f. also the abstract light photographs by Kuhr published in *ReD* and *bauhaus* 3, no. 2 (April-June 1929): 19 and the untitled watercolour in *Der Kunstnarr*: 3.

268. Ludwig Grote, "Junge Bauhausmaler," *Das Kunstblatt* (July 1929): 198-201. The article must have been written before about June. C.f. Ludwig Rote's introduction to the exhibition catalogue *Junge Bauhausmaler* (Hallescher Kunstverein, 1928): "Wohl zum Ausgleich gegen die strenge, bis zur industrietechnischen normgetriebenen Rationalisierung in den Bau- und Werkstattarbeiten des Bauhauses zeigen alle jungen Bauhausmaler einen unverkennbaren Hang zu lyrischen, phantastischen oder grotesken Visionen, zu erdgeistigen oder überirdischen Grenzerweiterungen der Form, zu einer Romantik...."

269. The Gallery was located in Berlin, and Kállai wrote essays for several of the exhibition catalogues of the gallery in 1929 and 1930. See the correspondence between Kállai and Ferdinand Möller in the Möller Archiv, Berlinische Galerie, Berlin. In both my opinion, and that of Eberhard Roters, Möller's biographer, Kállai played a crucial role in the conception and organization of the "Vision und Formgesetz" exhibition, though Möller was in fact its instigator and chief organizer. (Interview with Eberhard Roters, Berlin, March 1992.) See also: Roters, *Galerie Ferdinand Möller. Die Geschichte einer Galerie für Moderne Kunst in Deutschland. Breslau - Berlin - Köln. Ein Beitrag zur Geschichte der Kunst und der Kunstgeschichte im 20. Jahrhundert* (Berlin: Gebr. Mann Verlag, 1984), esp. 84. On the question of Kállai's role in the exhibition's organization, see also a series of three notices in *A bis Z*: Kállai, "ankündigung" 2, no. 10 (August 1930), 40; Kállai, "zur ausstellung "vision und formgesetz" in der galerie möller - berlin schreibt uns ernst kállai" 2, no. 11 (October 1930), 48; the editors of *A bis Z*, "an ernst kállai" 2, no. 12 (November 1930), 48.

270. Fritz Kuhr, "Gemälde, Aquarelle und Zeichnungen," announced in *bauhaus* 3, no. 3 (July-September 1929): 28.

271. See the exhibition catalogue *Internationale Ausstellung des Deutschen Werkbunds Film und Foto* (Stuttgart: Der Deutsche Werkbund, 1929); Eskildsen and Horak, *Film und Foto der zwan-*

ziger Jahre; Steinorth, ed. *Internationale Ausstellung des Deutschen Werkbunds Film und Foto Stuttgart 1929*; and Beaumont Newhall, "Photo Eye of the 1920s. The Deutsche Werkbund Exhibition of 1929" in Mellor, ed. *Germany. The New Photography 1927-33*; 77-86. Kuhr also had photographs on display at the "Fifo" in Stuttgart. (Cat. nos. 50-55, p. 53)

272. On "Raum 1," Eskildsen and Horak, eds. *Film und Foto der zwanziger Jahre*, 68-72 and 15-16, and Rudolf Junk, "Film und Foto" *Photographische Korrespondenz* 65, no 7 (July 1929), 229. While a detailed list of photographs displayed was published for the other rooms in the exhibition, this was not the case for Raum 1. (C.f. pp. 49-50 and "Nachtrag" p. I. of the exhibition catalogue.) A photograph of a part of Raum 1 (reproduced in Eskildsen and Horak, eds., *Film und Foto der zwanziger Jahre*, 191), shows a panel with medical x-ray photographs, one with criminological photographs, and some others, but neither microphotographs, nor cross-sectional photographs of animals. (The original print is in the Museum Folkwang, Essen, *Fotographische Sammlung*.) A photograph of the equivalent section of the Berlin showing of the exhibition (see below) also does not show enough to be able to establish the presence -- or absence -- of the photographs Kállai describes. ("Historische Einführung," *Staatliche Museen, Preussischer Kulturbesitz, Kunstbibliothek, Berlin*. Thanks to Janos Frecot and Inka Graeve at the Berlinische Galerie for showing me a copy of this photograph.) The scientific material may have come either from Erich Stenger's famous collection of historical and scientific photography, or from Moholy-Nagy's own collection, or both. (On this question, see Eskildsen and Horak, eds., *Film und Foto der zwanziger Jahre*, 68.) Stenger's collection was also shown at most of the other such exhibitions in Germany between the world wars.

273. Kállai, "Schöne Photos, billige Photos," 736-38.

274. *Internationale Wanderausstellung des Deutschen Werkbundes Film und Foto*. Im Lichthof des ehemaligen Kunstgewerbemuseums. (exh. cat.) (Berlin, 1929). Reprinted in part in Steinorth, ed. *Internationale Ausstellung*, unpag. Note that Kuhr also exhibited in the Bauhaus section of the Berlin show.

275. Other displays of scientific photography which Kállai could have seen in 1929-30 include those which formed part of "Fotografie der Gegenwart," at the Museum Folkwang in Essen (20 January to 17 February 1929) and of "Das Lichtbild" in Munich (June to September 1930), which also showed part of the FIFO material. See Eskildsen, "Fotokunst statt Kunstphotographie," 8-25. For a list of such exhibitions: 190-91. Both exhibitions included scientific material. "Fotografie der Gegenwart," with a section entitled "Die Aufnahme im Dienst der Wissenschaft und Forschung," also travelled during 1929 to

Hannover (10 March-17 April), Berlin (20 April-20 May), Dresden (15 September-6 October) and Magdeburg (28 November-19 December).

276. Ernst Kállai, "Bewegungskunst," *Sozialistische Monatshefte* 72 no. 9 (September 1930): 944.

277. Kállai, "Kunst und Wirklichkeit," *Sozialistische Monatshefte* 37, no. 10 (October 1931): 1005. In the title of this article Kállai may have been echoing the title of C. August Emge's 1924 book *Die Idee des Bauhauses: Kunst und Wirklichkeit* (Berlin: Pan Verlag Rolf Heise, 1924). The cover of this little-known work was designed by Moholy-Nagy. See: *Katalog 105: Bauhaus etc.* (Berlin: Jürgen Holstein Antiquariat, 1987), item 1049. A shorter, Hungarian-language version of "Kunst und Wirklichkeit" was published as "Valóság és művészet" [Reality and Art] in the Budapest journal *Jelenkor* (15 July 1940), 12. In an undated list of slide-illustrated lectures Kállai was offering in the early 30s, the first one is entitled "Kunst und Wirklichkeit." (M.K.Cs.; inv. no. MDK-C-I-11/590.6)

278. Kállai, *Vision und Formgesetz*, 2-4. C.f.; Kállai, "Rhythmus in Bildern" *Die Weltbühne* 26, no. 41 (7 October 1930): 553-6.

279. Ernő Kállai, "Kunst und Technik," *Sozialistische Monatshefte* 37, no. 11 (November 1931): 1099-1100.

280. See the unpublished typescript exhibition proposal dated 13.5.1931, prepared while Kállai was in Rauschenberg. (p. 13) (M.K.Cs.; inv. no. MDK-C-I-11/573) In published form: "Kunst und Wirklichkeit." Another published variation of the text is: "Zurück zum Ornament," *Forum* (1932), 226. The collaborative nature of the proposal between Kállai and Möller is suggested by his reference to the exhibition in an undated letter to Maria Möller-Garny (Mrs. Ferdinand Möller), which Kállai sent while spending the summer of 1931 in Rauschenberg near Kassel. The letter can be dated circumstantially to June. (Archiv Ferdinand Möller, Berlinische Galerie, Berlin.)

281. C.f. Gustav Stotz's plan for the FIFO show: "Umfangreich sind die Gebiete, die dafür in Frage kommen. Um einige zu nennen: Photoreportage im weitesten Sinne, also Sportaufnahmen, Kriegsbilder, Strassenbilder, Nachtaufnahmen, kriminelle Photographie, ferner technisch-wissenschaftliche Aufnahmen aus Zoologie, Botanik, Medizin (Röntgenphoto), Physik (Mikrophoto), Luftbilder, Materialaufnahmen..." "Dem Plan der Stuttgarter Veranstaltung liegen folgende Tatsachen zu Grunde," *Der Kunstblatt* (1929), 154. Reprinted in Steinorth, ed., *Internationale Ausstellung*, unpag.

282. He again expresses this in his article "Bioromantik" of the following year (pp. 271-2): "Das Bild, das die materialistische Naturwissenschaften des vorigen Jahrhunderts von den Entwicklungsgesetzen und Formen organischen Lebens entwarf, ist gründlich überholt durch den Begriff der inneren Zielstrebigkeit und Ideenbestimmtheit." C.f. Hannes Meyer's critical view towards Darwin's theories referred to by Hoffmann, "Hannes Meyer -- ökologische Aspekte seiner Lehre und deren Auswirkung," 99.

283. Die neue Biologie versteht unter Urform "nicht mehr einen für die 'Entwicklung' im Darwinischen Sinn stammgeschichtlich neutralen Anfangspunkt, sondern die in allen zu einem Typus 'gehörigen Arten und Gattungen, auch in den anfänglichsten schon vollständig vorhandene typenhaft konstitutionelle Gebundenheit und Bestimmtheit, die Potenz (man denke an die Bemühungen von Hans Arp organische Lebensformen in letzter, konzentriertester Potenz zu Bildern und Plastiken zu verarbeiten) "die bei allem ausserem evolutionistischem Formenwechsel als das Lebendig-Beständige da ist -- eine Entelechie wie auch Goethe wohl den Begriff Urform fasste....

Edgar Dacqué, *Urwelt, Sage und Menschheit. Eine naturhistorisch-metaphysische Studie* Sixth edition. (Munich and Berlin: R. Oldenbourg, 1931). First published in 1924(?). It is probable that Kállai used the 1931 edition for this exhibition proposal. The ideas in this book were further developed by Dacqué in *Natur und Seele. Ein Beitrag zur magischen Weltlehre* (Munich and Berlin: R. Oldenbourg, 1926) and *Leben als Symbol. Metaphysik einer Entwicklungslehre* (Munich and Berlin: R. Oldenbourg, 1929), Forewords of both. It is not certain that Kállai knew of these two latter volumes. The term "Entelechie" (English: "entelechy") refers to an organic system or series of events; i.e. an entity, and was a basic category of Hans Driesch's system of thinking. In English, see, e.g. his *The Science and Philosophy of the Organism* (Aberdeen: Aberdeen University, 1909). Thanks to Hilmar Frank for bringing Driesch to my attention. It is noteworthy that in 1931 Kállai accepted the teleological position of Neo-Lamarckianism, which he had earlier so ardently criticized. For example in "Korrekturát. A de Stijl figyelmébe."

284. See the chapter "Naturdämonie und Paradies" in Dacqué, *Urwelt, Sage, Menschheit*. Kállai's engagement with the question of the representation of the "demonic" goes back to his "Dämonie der Satire" of 1927, and developed through his encounter with Jung's ideas. Dacqué's book forms an interesting parallel to the ideas being developed at the same time by

Joseph Campbell (under the influence of Jung) in the United States.

285. Kállai, "Ideen- und Organisationsentwurf zu einer Internationalen Ausstellung moderner Kunst im Leipziger Museum," 9.

286. On this, see Chapter One.

287. It seems that the Leipzig Museum was unable to afford the show itself, but tried to get others involved, without success. In a June 1931 letter to Maria Möller-Garny referred to above Kállai writes: "Über die Pleite in Leipzig haben Sie schon gehört. Schade, wenn die Ausstellung überhaupt nicht zustande käme. Aber Dr. Teupser will ja versuchen noch andere Museen für die Beteiligung zu gewinnen. Wie finden Sie meinen Ausstellungsplan?"

288. Kállai, "Zeichen und Bilder," *Forum* (1933): 122-3; 150-51.

289. The concept of a new, post-Expressionistic romanticism had been in the air for a few years at this point. C.f. Kandinsky's phrase "Auch ich liebe die kahle Wand, weil sie einer der Klänge der neuen kommenden Romantik ist," contained in his aesthetic statement "Die kahle Wand," written for *Der Kunstnarr*: 20.

290. Éva Forgács, "Bevezető" [Introduction] to Forgács, ed., Kállai, *Művészet veszélyes csillagzat alatt: Válogatott cikkek, tanulmányok* [Art under dangerous constellations: Selected articles, studies] (Budapest: Corvina, 1981), 24.

291. Lucy Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972* (New York: Praeger, 1973).

292. Ernst Kállai, "Grenzen der Technik," *Die Weltbühne* 27, no. 14 (7 April 1931): 505.

293. Kállai, "Zurück zum Ornament."

294. Kállai, *Vision und Formgesetz*, 4-5.

295. Klee, "Exakte Versuche im Bereich der Kunst," 17. On Schlemmer's wariness, e.g., see *The Letters and Diaries of Oskar Schlemmer*, 226ff.

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VITA

Oliver Árpád István Botar was born in Toronto, Ontario on September 2, 1957, the son of Dr. Olivér Botár and Mrs. Gabriella Králik Botár. He attended grade school in Edmonton, Alberta, and graduated from Archbishop O'Leary High School in 1975. He received a Bachelor of Arts, Magna cum Laude, from the University of Alberta in 1979, with a major in Urban Geography and minors in English and philosophy. In 1979-80 he was on scholarship in Budapest, Hungary, studying art history. After this he entered a Master of Science program in Urban and Regional Planning at the University of Toronto. He began work as a free-lance art writer and curator in 1981, and he has been publishing, curating and lecturing regularly on the history of art and on contemporary art since then. In 1982-83 he worked as an Assistant Planner for the City of Edmonton. After spending a second year on scholarship in Hungary in 1984-85 to research his thesis in Urban Planning, he graduated in 1985. In 1987 he graduated with a Master of Art in Art History from the University of Toronto, and he entered the Ph.D. program at that university the following year. He began teaching at the University of Toronto in 1990, and has since also taught at Queen's University and the University of Guelph. He has held a position in Modern Art History at the University of Manitoba since 1996, and currently holds the rank of Assistant Professor.

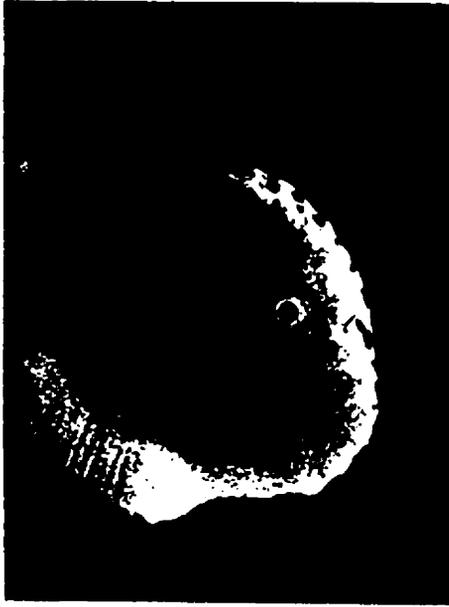


Fig. Argentinus

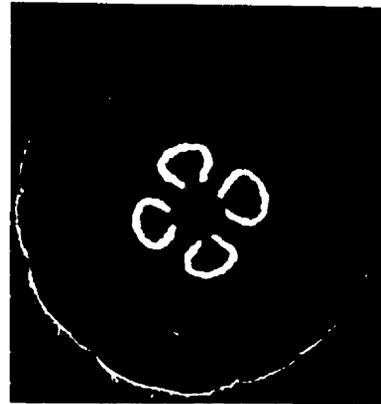


Podvodná krajina - Pan sige anamoren - Tiefseeforschung
STANSKY TOYER - Fotopapier Photopapier



Calium

fotografie a
mikrofotografie
podmorskeho
sveta



Musa - Madusa - Musce

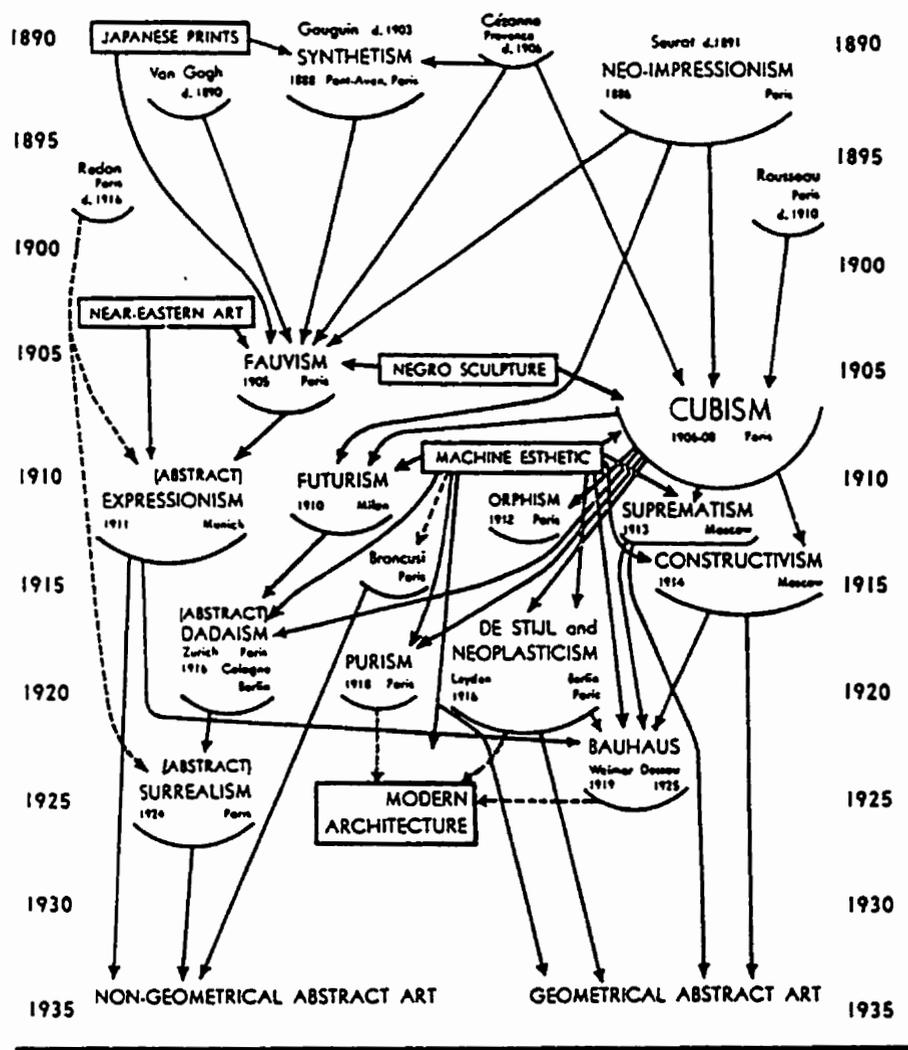
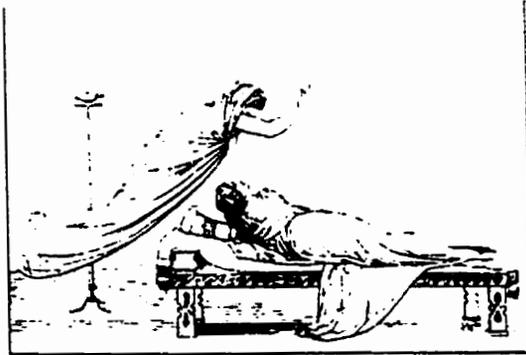
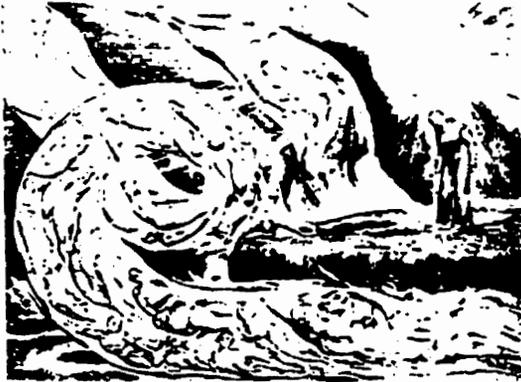


Figure 1-1



40. "Penelope's Dream," John Flaxman, 1792



41. "The Whirlwind of Lovers," William Blake, 1827



The sequence of pictures on this and the two following pages illustrates the growing dissolution of the spatial foundation of Romanticist reality. The expressive lines, colors and subject matter distort and finally dissolve the distinct system of spatial lines, space-supporting colors and idealized subject matter which symbolized the traditional ground of static Being.

42. "Nocturnal Landscape," Vincent van Gogh, 1890



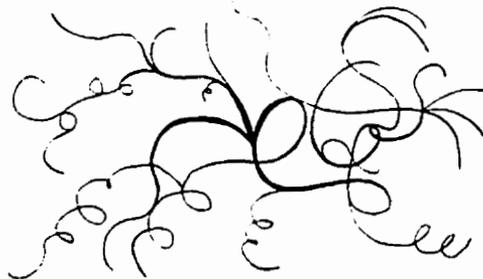
43. "Moonlight Cove," Albert P. Ryder, about 1900



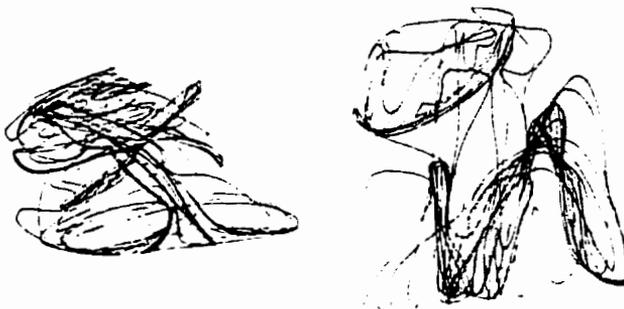
47. "Man reading in bed," Paul Klee, 1910



48. "Prickly Current," Paul Klee, 1928



49. Non-objective expressive design. Wassily Kandinsky, 1934



50. Pen drawing (detail). Stanley William Hayter, 1944

The Biocentric Discourse Intersection

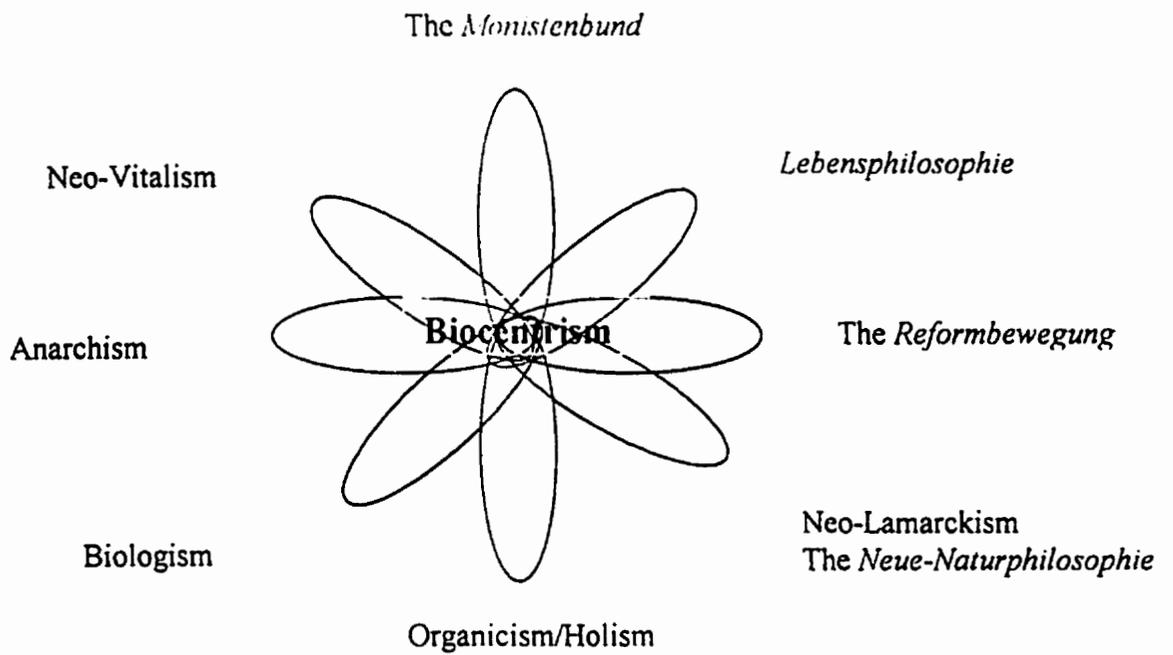


Figure 2-1

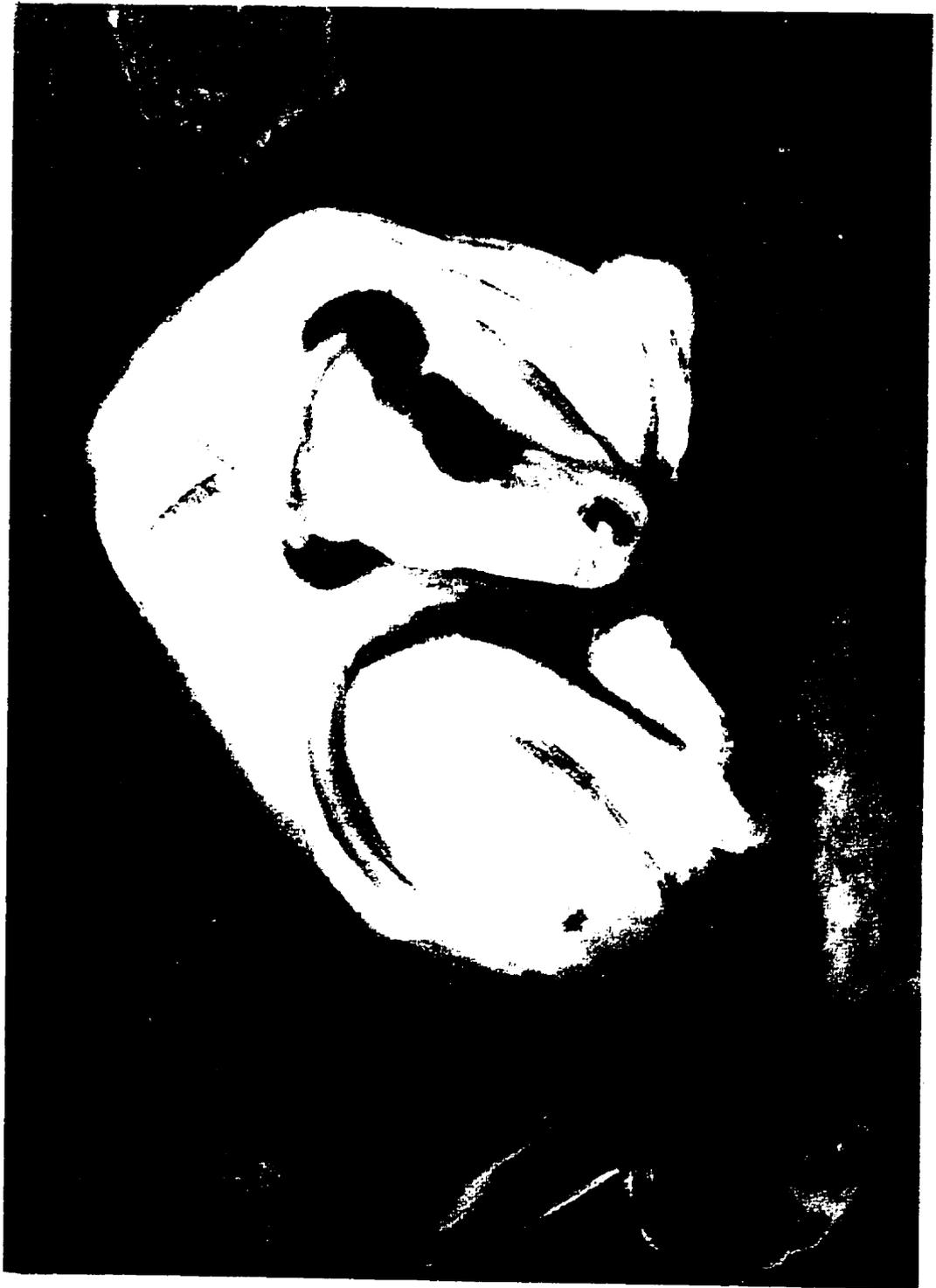


Figure 3-1



81:2166:01

Figure 3-2

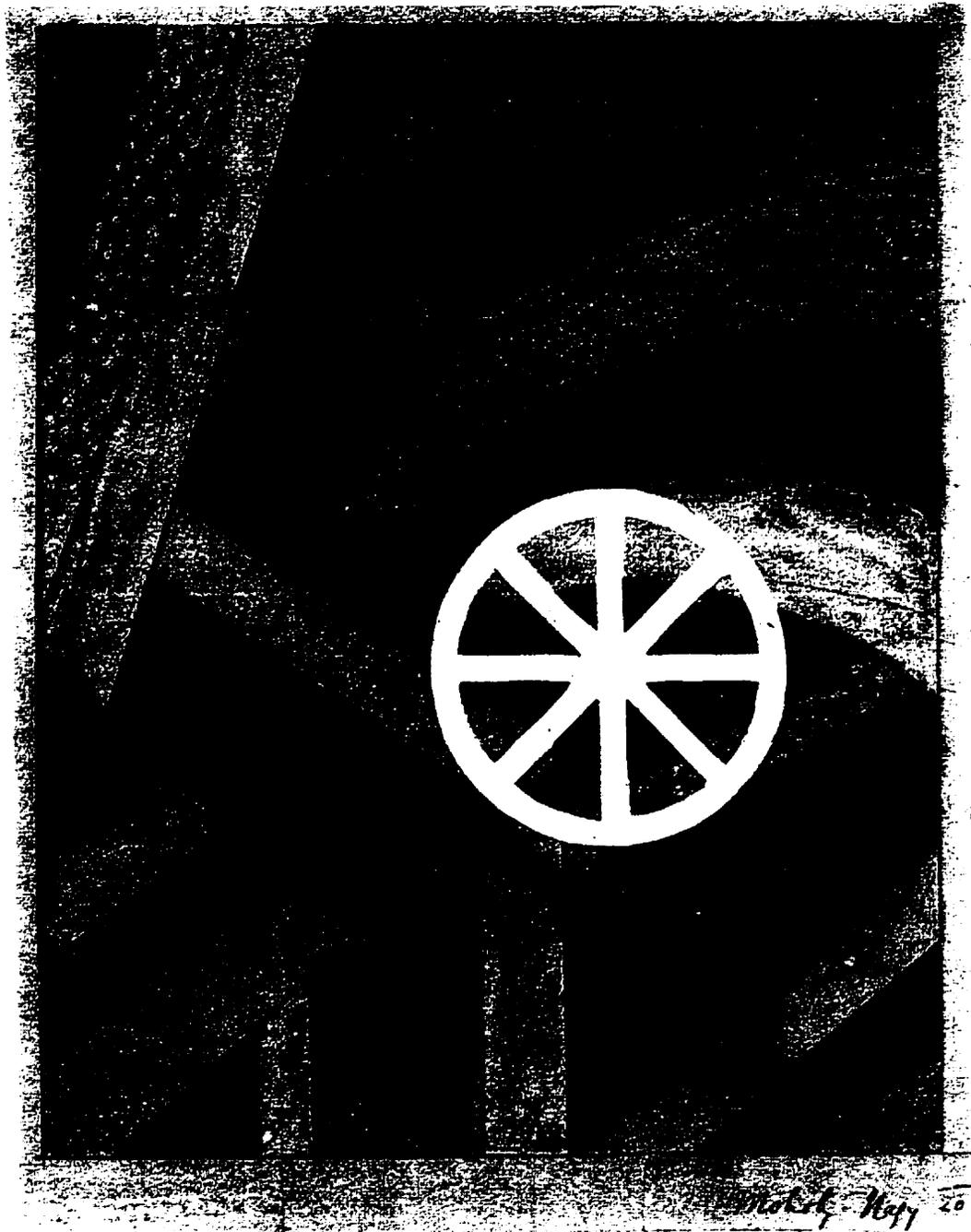


Figure 3-3

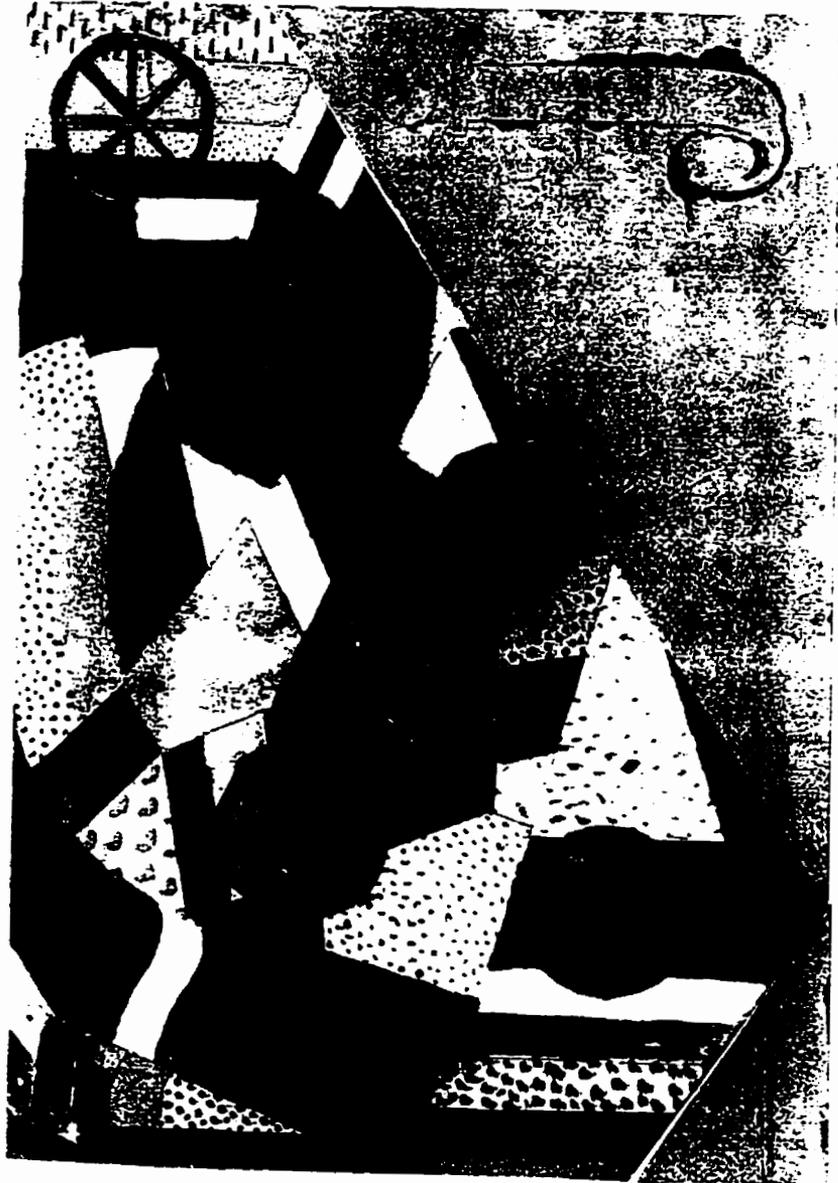
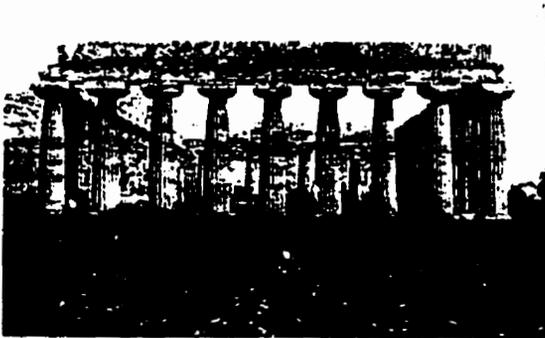


Figure 3-4



PARATHON, de 800 à 550 av. J.-C.

Il faut tendre à l'établissement de *standarts* pour affronter le problème de la *perfection*.

Le Parthenon est un produit de sélection appliquée à un standard établi. Depuis déjà un siècle le temple grec était organisé dans tous ses éléments.

Lorsqu'un standard est établi, le jeu de la concurrence immédiate et violente s'exerce. C'est le match ; pour gagner, il faut faire mieux que l'adversaire *dans toutes les parties*, dans la ligne d'ensemble et dans tous les détails. C'est alors l'étude poussée des parties. Progrès.



Cliche de *La Vie Automobile*.

HUMMER, 1907.



Cliche *Albert Marquet*.

PARATHON, de 800 à 550 av. J.-C.

Le standard est une nécessité.

Le standard s'établit sur des bases certaines, non pas arbitrairement, mais avec la sécurité des choses motivées et d'une logique contrôlée par l'expérience.

Tous les hommes ont même organisme, mêmes fonctions.

Tous les hommes ont mêmes besoins.

Le contrat social qui évolue à travers les âges détermine des classes, des fonctions, des besoins standards donnant des produits d'usage standard.

La maison est un produit nécessaire à l'homme.



DAIMLER, Grand Sport 1921.

« Tout est sphères et cylindres. »



Il y a des formes simples déclencheuses de sensations constantes.

Des modifications interviennent, dérivées, et conduisent la sensation première (de l'ordre ma-



jeur au mineur), avec toute la gamme intermédiaire des combinaisons. Exemples.

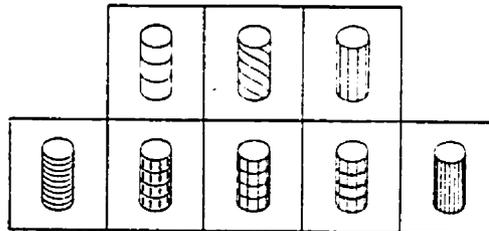


Figure 4-2

A. S. France
**Die Pflanze
als Erfinder**



**Kosmos, Gesellschaft der Naturfreunde
Franck'sche Verlagshandlung-Stuttgart**

Figure 4-3

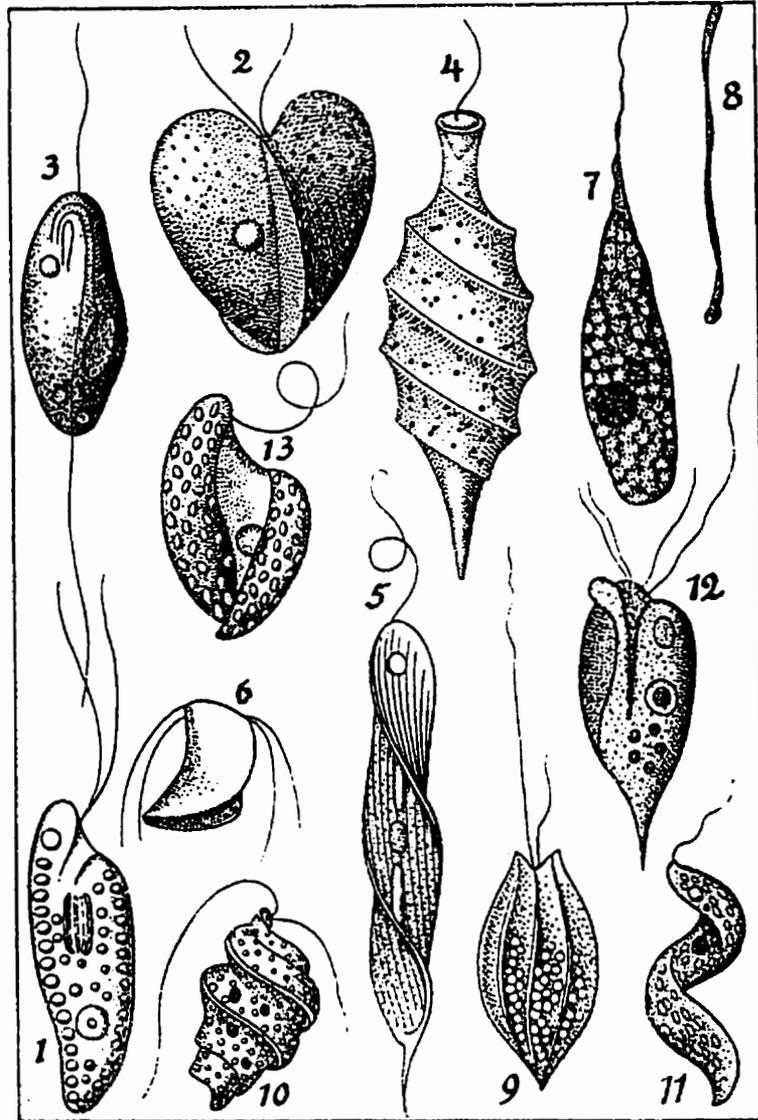


Abb. 9. Flagellatenformen. (Erklärung nebenstehend.)

Figure 4-4

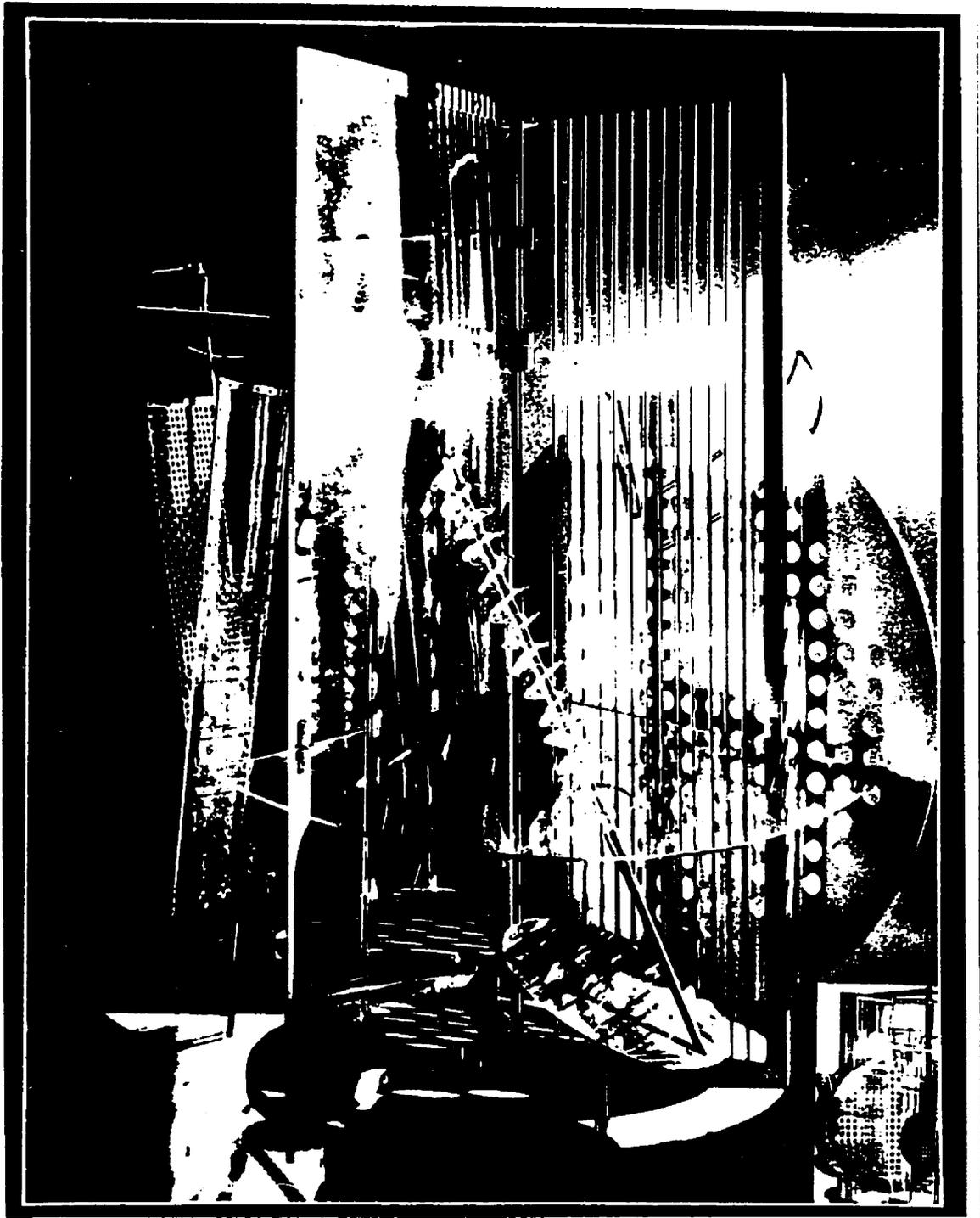


Figure 4-5

Auch der Propeller ist nichts anderes, als eine Anwendung des gleichen Prinzipes, und wenn die Schiffsbau-technik im Laufe der Zeiten zu immer anderen Schiffsschrauben übergegangen ist und sowohl die amerikanische, englische, wie die deutsche Marine jede auf ein anderes Modell schwört, so erlaubt sich hiermit die älteste Schiffsbau-firma der Welt auf ihre reiche Modellsammlung hinzuweisen, unter denen sich eine ganze Anzahl Schiffsschraubenvorlagen findet (vgl. z. B. Abb. 9, 6), die zwar von der Natur, noch aber nicht vom Menschen erprobt sind und wohl durch einen Versuch bald Sonderzüge oder Anwendungen für bestimmte Fälle erweisen würden.

Freilich hat der allermodernste Techniker doch nur mehr ein über-legenes Lächeln für alle solche etwas veraltete Fragen, da er im Turbinenschiff eine Entdeckung von ganz anderer Tragweite gemacht hat. Aber im biotechnischen Museum der Natur wartet schon längst eine besondere Sammlung von Turbinenschiffen und Turbinen darauf, vom Menschen beachtet und kopiert zu werden.

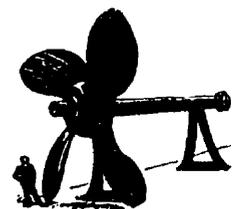


Abb. 10. Einer der größten Schiffspropeller der Welt, der in den Sammlungen des Deutschen Museums in München aufgestellt ist. (Vgl. dazu Abb. 9.)

Die heimischen Gewässer enthalten auch diese Modelle; will man sie aber in ihrer größten Vollendung sehen, muß man sich dorthin wenden, wo auch die besten Schwimmleistungen vom Bedürfnis des Alltags erfordert werden. Im Meere, auf der Hochsee treiben zu Millionen winzig kleine, im besten Fall nur den Bruchteil eines Millimeters messende, glasartige, leicht goldigbraun schimmernde Pflänzchen, die die Botaniker mit dem Sammelnamen Peridineen belegen.

Ein Blick auf die Abb. 11 zeigt, daß sie merkwürdig, sogar hübsch gestaltet sind; ihre Beobachtung ergibt, daß sie eine abenteuerliche Lebensweise führen. Sie schweben frei im Wasser; je weiter weg von der Küste, desto sicherer sind sie vor der sie zerreibenden Brandung geborgen. Nicht darauf kommt es ihnen an, an der Oberfläche zu schwimmen; da wären sie der Zerstörung durch die Wellen ausgesetzt. Einige Fuß unter dem Wasserspiegel ist ihr Reich; dort, wo es schon ruhig, aber noch so hell ist, daß eine ehrfame Pflanze ihr Auskommen findet.

Um nun dieses Schweben in bestimmter Tiefe zu erzielen, haben sie gewisse technische Leistungen höchst verwickelter Art hervorgebracht. Ihr Körperchen, das eine einfache Zelle ist, umkleidet sich mit einem Panzer aus reiner Zellulose, nur manche (vgl. Fig. 4 der Abb. 11) sind völlig nackt. Dadurch haben sie ein sehr plastisches Baumaterial von hervorragenden Qualitäten zur

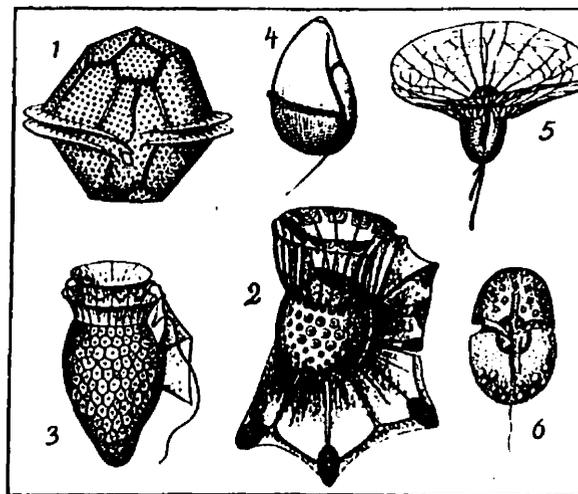


Abb. 11. Peridinae des Meeres, als natürliche Modelle von Turbineneinrichtungen. 1 *Oosiodoma acuminatum*, 2 *Ornithocercus maculifera*, 3 *Dinophysis acuta*, 4 *Gymnodinium spirale*, 5 *Ornithocercus splendens*, 6 *Gymnodinium rhomboides*. (Nach Schmidt.)

Verfügung. Sie bauen aus ihm eine Art Zellapparat, der die Bewegung des sie umspülenden Wassers in bestimmte Bahnen zwingt. Man betrachte Abb. 11, Fig. 1 oder 4. Auch ohne Maschinenausbauer zu sein, wird man nicht daran zweifeln, daß jede seitlich kommende Strömung, durch eine derartige Gestaltung in schraubigen Bahnen abgelenkt, durch ihre Gewalt den ganzen Körper gleich einem Laufrad in eine rotierende Bewegung versetzen muß. 8

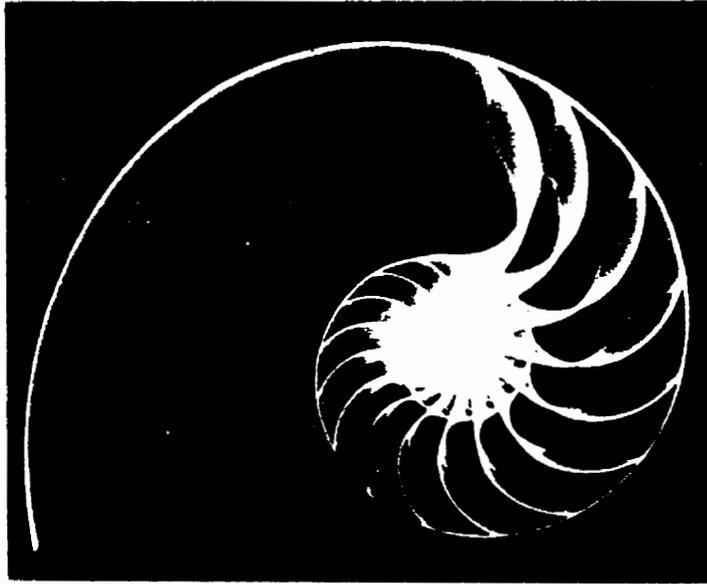
Strand, Die Pflanze als Schiffbau.



Figure 4-7



Figure 4-8



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Figure 4-10

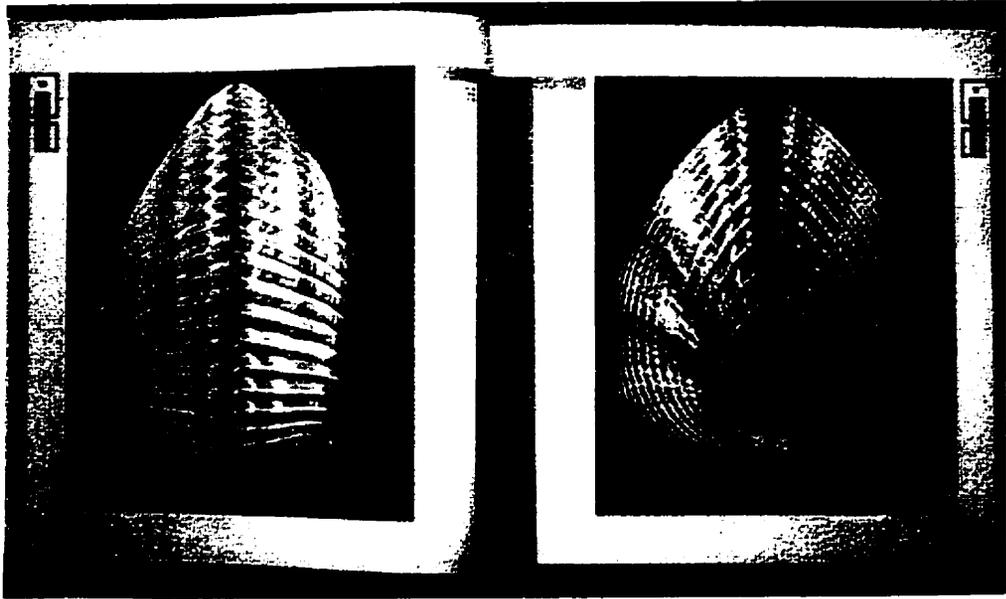


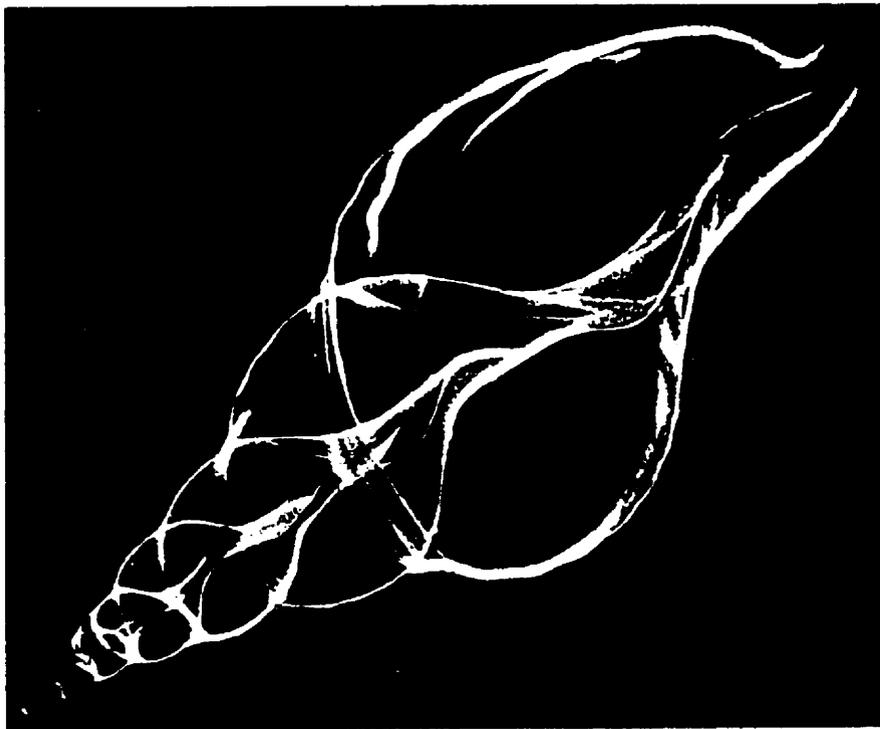
Figure 4-11 (top) Figure 4-12 (bottom)

Oder, den Uebergang der Krümmung aus dem 2. dimensional in das 3. dimensionale sehen wir, aber den Uebergang der 3. dimensional Krümmung ins 4. dimensionale kann weder unser Gesichtssinn noch unser Tastsinn erfassen.



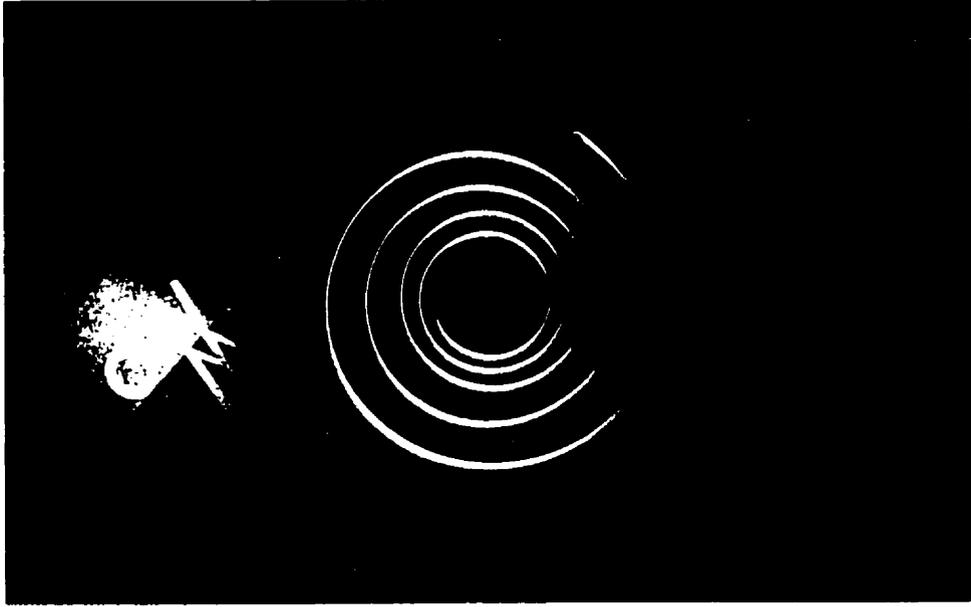
Feingenaufnahme einer Turbinen-Muschel. Dr. J. B. Polak

Die Zeit wird von unseren Sinnen indirekt erfaßt, die Veränderung der Lage eines Gegenstandes in dem Raum zeigt es an. Wenn die Schnelligkeit dieser Veränderungen bis an die modernen Rhythmen angelangt war, sahen sich die Kler es zu registrieren genötigt. Die italienischen Futuristen haben noch das Flimmern der Körper, die in ihrer Schnelligkeit den Raum quer- und durchkreuzen abgemalt. Aber Körper werden in Bewegung durch Kräfte gebracht. Der Suprematismus hat die dynamische Gespantheit der Kräfte gestaltet. Die Leistungen der Futuristen und Suprematisten sind statische Flächen, die die Dynamik bezeichnen. Es sind ins Irrationale transponierte und versinnlichte Kurventabellen der Schnelligkeit und des Dynamismus. Es hat nicht befriedigt. Man wollte die Bewegung durch Bewegung gestalten. Die Lösung von Boccioni war naturalistischer Art. Er hat einen Teil seiner Plastik mit einem Motor verbunden, so daß die organische Bewegung des Körpers imitiert war. Tatlin und die Konstruktivisten in Moskau haben die Bewegung symbolisiert. Die einzelnen Körper des „Denkmals der III. Internationale“ drehen sich um ihre eigene Achse mit einer Geschwindigkeit: ein Jahr, ein Monat, ein Tag. Prusakow hat 1921 ein bewegliches Relief konstruiert, das mit einem dadaistischen Einschlag eine Fabrikkomiteesitzung symbolisiert oder karikiert. Gabo hat stilisiert die pendelnde Bewegung eines Metronoms. Russische Kunstausstellung Berlin 1922. Das einzig wichtige hat die moderne dynamische Reklame geleistet, denn sie ist aus der direkten Notwendigkeit zu wirken auf unsere Psyche entstanden und nicht aus ästhetischen Reminiszenzen.



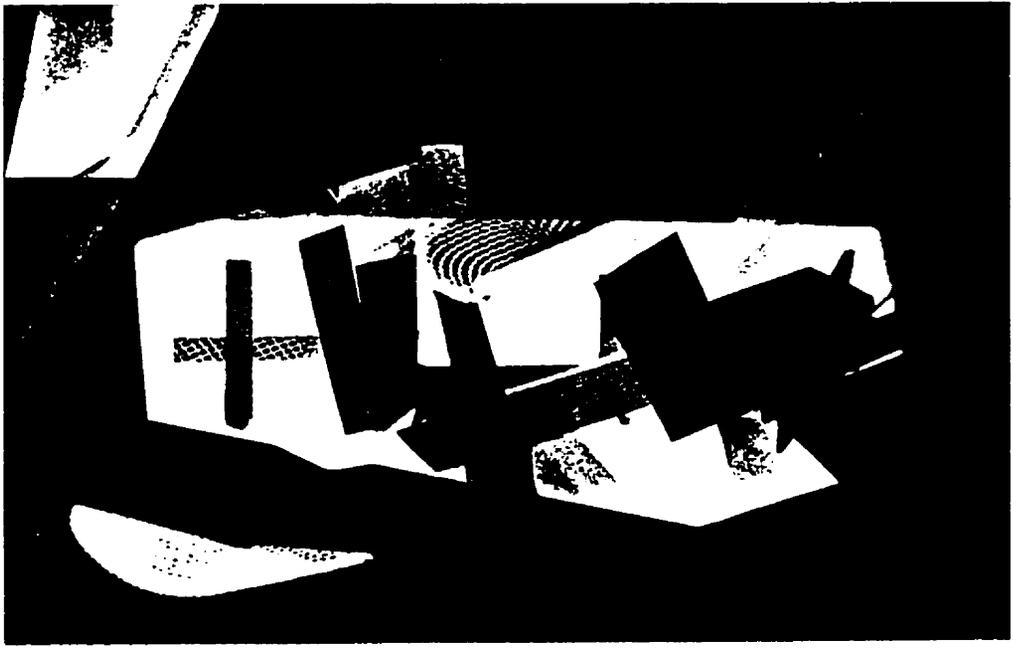
Shell, Triton Tritonia

A ray photo J. B. POLAK
From: 'Wendingen', Amsterdam



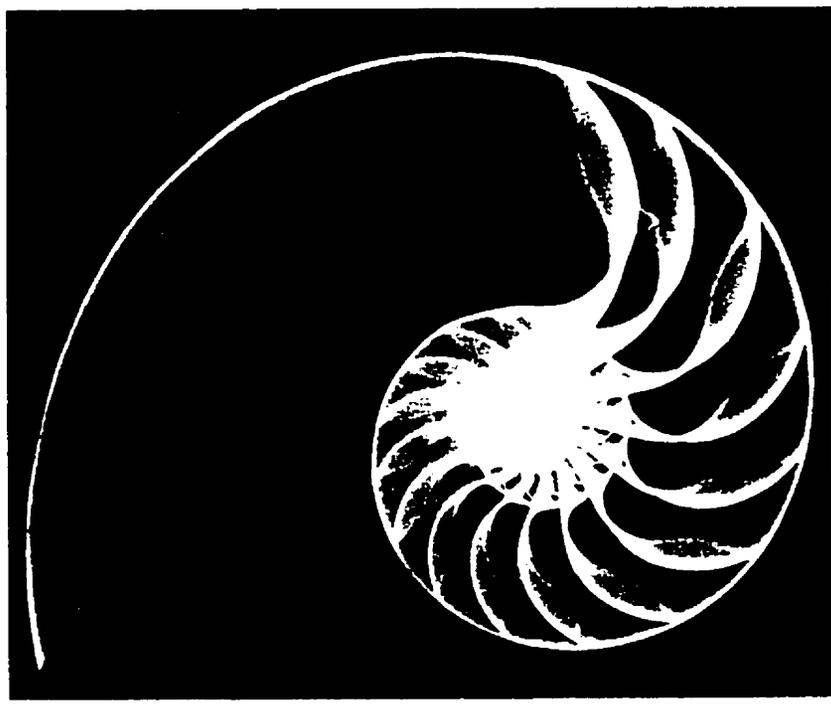
Camera-less photograph
Contrasting relationships between black and white with the finest
transitions of grey
Photogram MOHOLY-NAGY

Figure 4-14



MOHOLY-NAGY

Camera-less photograph



J. B. POLAK
From "Wendingen," Amsterdam

Shell Neutilus Pompilius

Figure 4-15

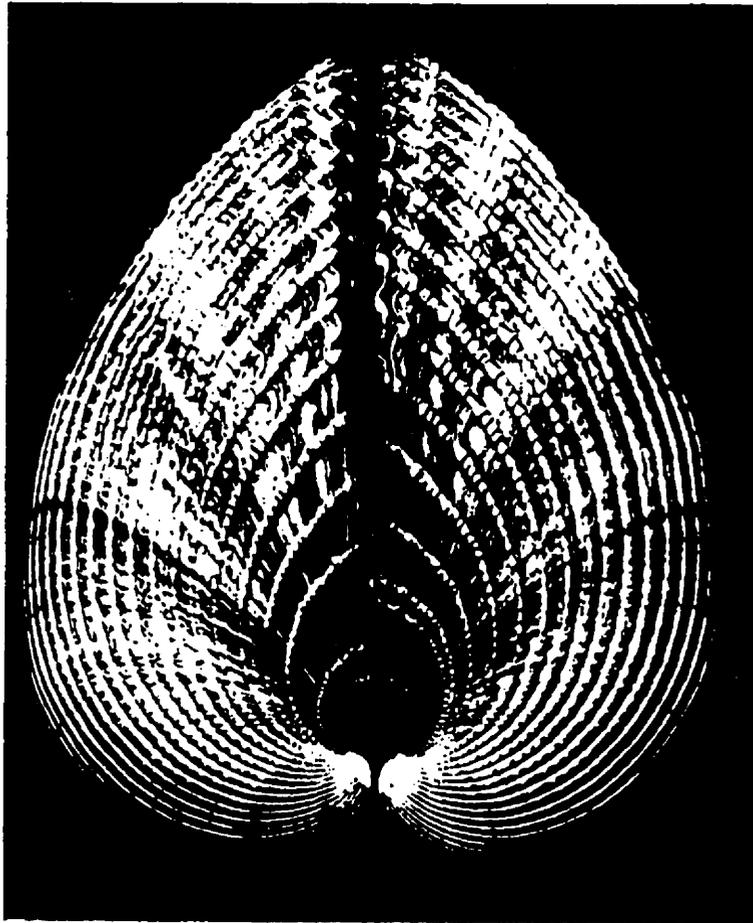
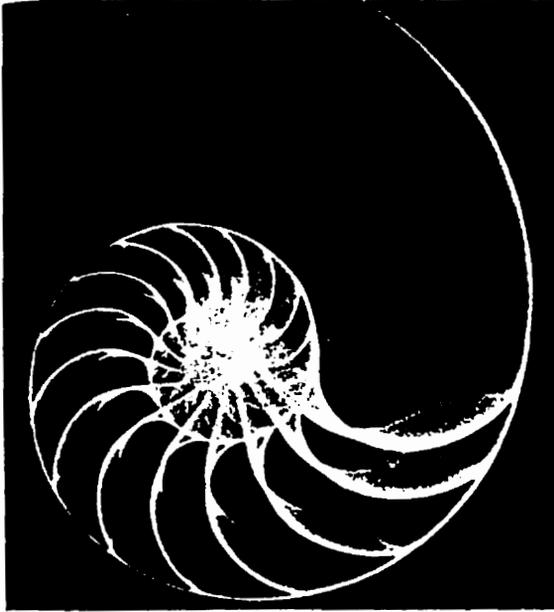


Photo « Wendingen ».

ESPRIT DE VÉRITÉ

Le lait de chaux, Diogène... Heure de l'architecture. Vérité,
sens de vérité...

XII. NATURE AND THE MACHINE



1. Roentgen photograph of Nautilus by J. B. Polak. Nature's use of the spiral in construction. The x-ray, like the microscope, reveals a new esthetic world.

Courtesy of Wendingen.

2. Section of modern hydro-turbine: spiral form dictated by mechanical necessity. Geometrical forms, simple and complex, are orchestrated in machine design.

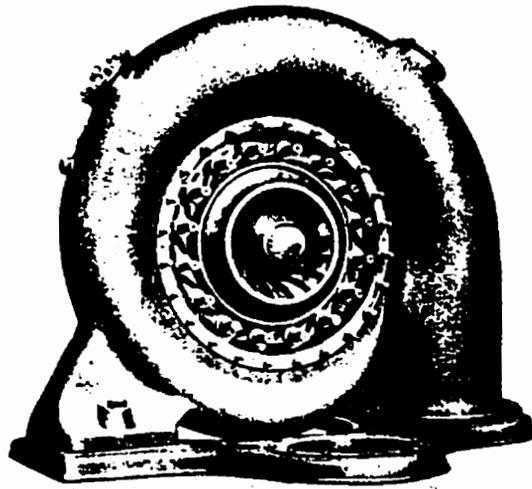


Figure 4-17

8 M E R Z 9

DIESES DOPPELHEFT IST ERSCHIENEN UNTER DER REDAKTION VON
EL LISSITZKY UND KURT SCHWITTERS

TYPOGRAPHIE ANGEZEIGT VON EL LISSITZKY
HERAUSGEBER K. SCHWITTERS



REDAKTION DES MERZVERLAGES
KURT SCHWITTERS, HANNOVER, WALDHAUSENSTR. 5"

BAND 2, NR. 8 9
APRIL
JULI
1 9 2 4

NATUR VON LAT. **NASCI**

D. I. WERDEN ODER ENT.

STEHEN HEISST ALLES,

WAS SICH AUS SICH

SELBST DURCH EIGENE

KRAFT ENTWICKELT

GESTALTET UND BEWEGT

KLEINER BRONNHAUS

NASCI

Nature, du latin signifie devenir, provenir, c'est à dire tout ce qui par sa propre force se développe en forme, se meut.

Figure 4-18

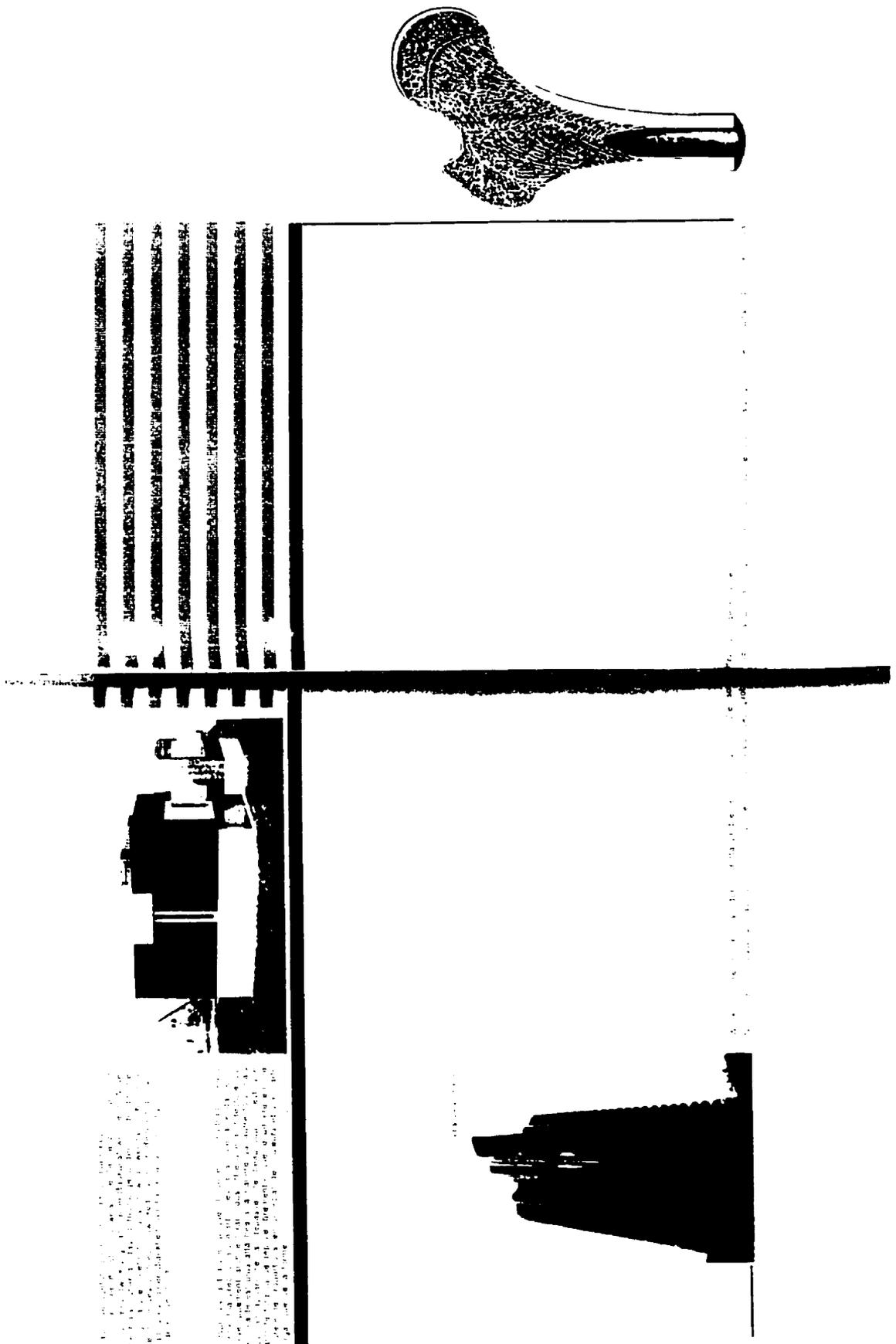


Figure 4-19

Anatomen ist es hierbei sofort erinnerlich, daß es noch andere lebende Strukturen gibt, in denen gleiches stattfindet, auch dieselben mechanischen Gesetze realisiert sind. Ich meine hierbei die Knochenbälkchen der Epiphysen in Röhrenknochen, von denen seit Culmans

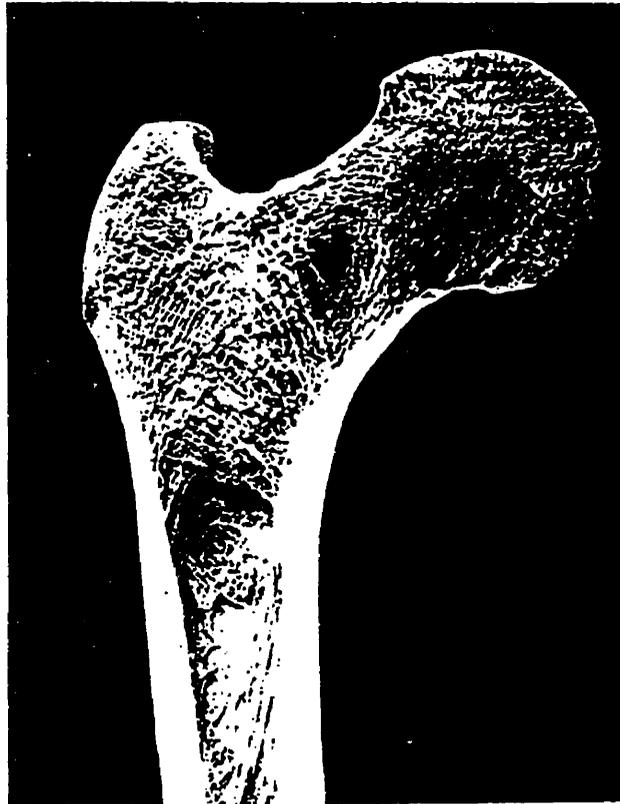


Abb. 116. Längsschnitt durch einen menschlichen Femur mit dem System der Knochenbälkchen. $\frac{1}{2}$ nat. Größe.

epochemachender Entdeckung bekannt ist, daß sie genau dem Gesetz von Druck und Zug gemäß gelagert sind (Abb. 116) und dadurch ein System von Verspannungen herstellen, das auch im Tier- und Menschenkörper ein Vorbild technischer Konstruktionen schafft. Diese Knochenbälkchen, histologisch gesprochen: interstitielle Lamellen der Spongiosa, welche auch auf die Compacta übergreifen; können nun, wie längst bekannt, bedürfnisgemäß, nach dem Gesetz der funktionellen

Fig. 128. The seven biotechnical elements: crystal, sphere, cone, plate, strip, rod, and spiral (screw).

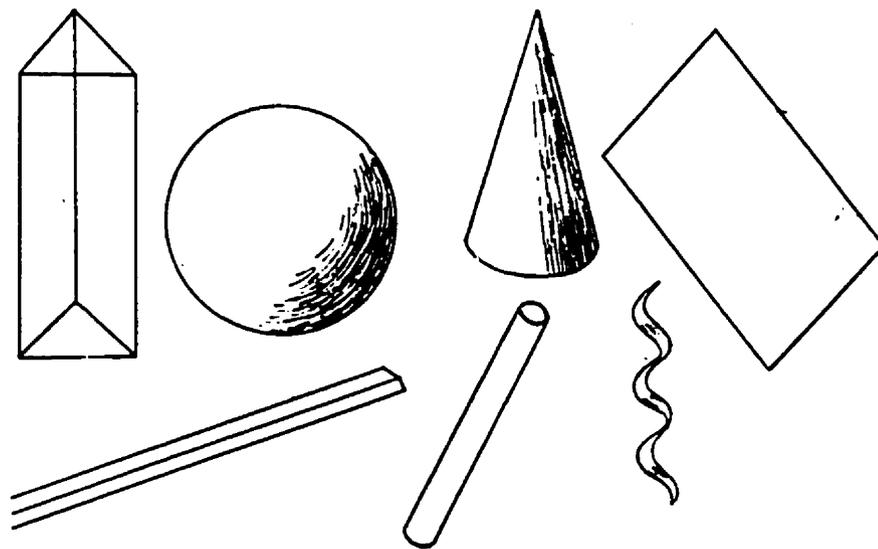
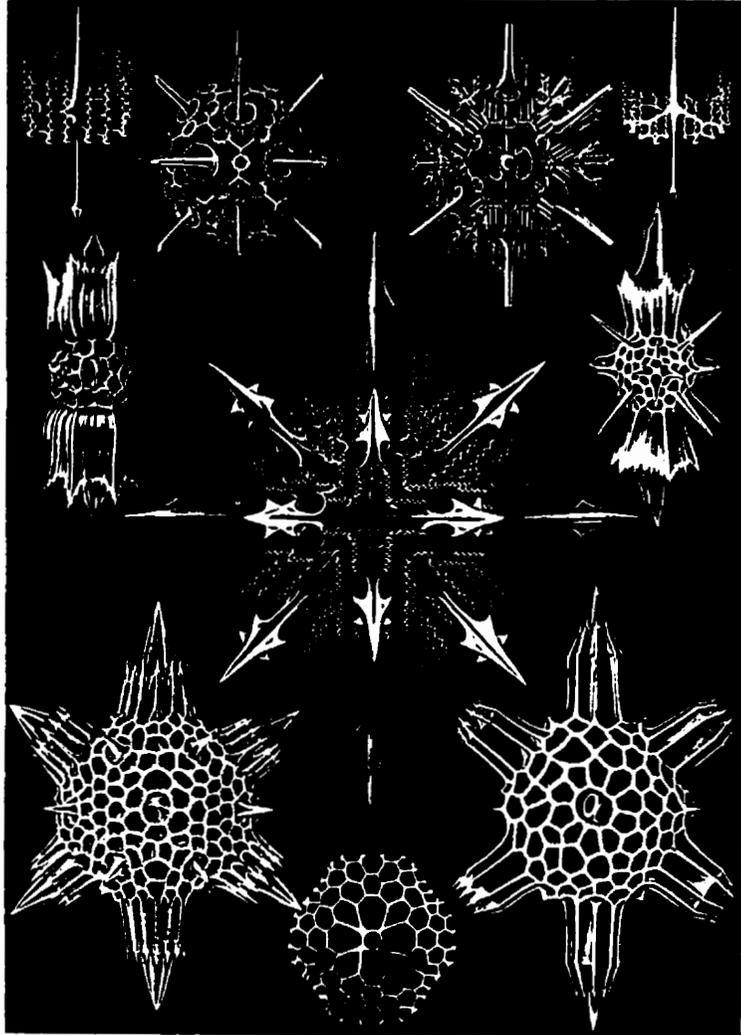


Figure 4-23



Acanthophracta. Bündelstrahlung.

Figure 4-24



Ein Tropfen Sumpfwasser

Figure 4-25

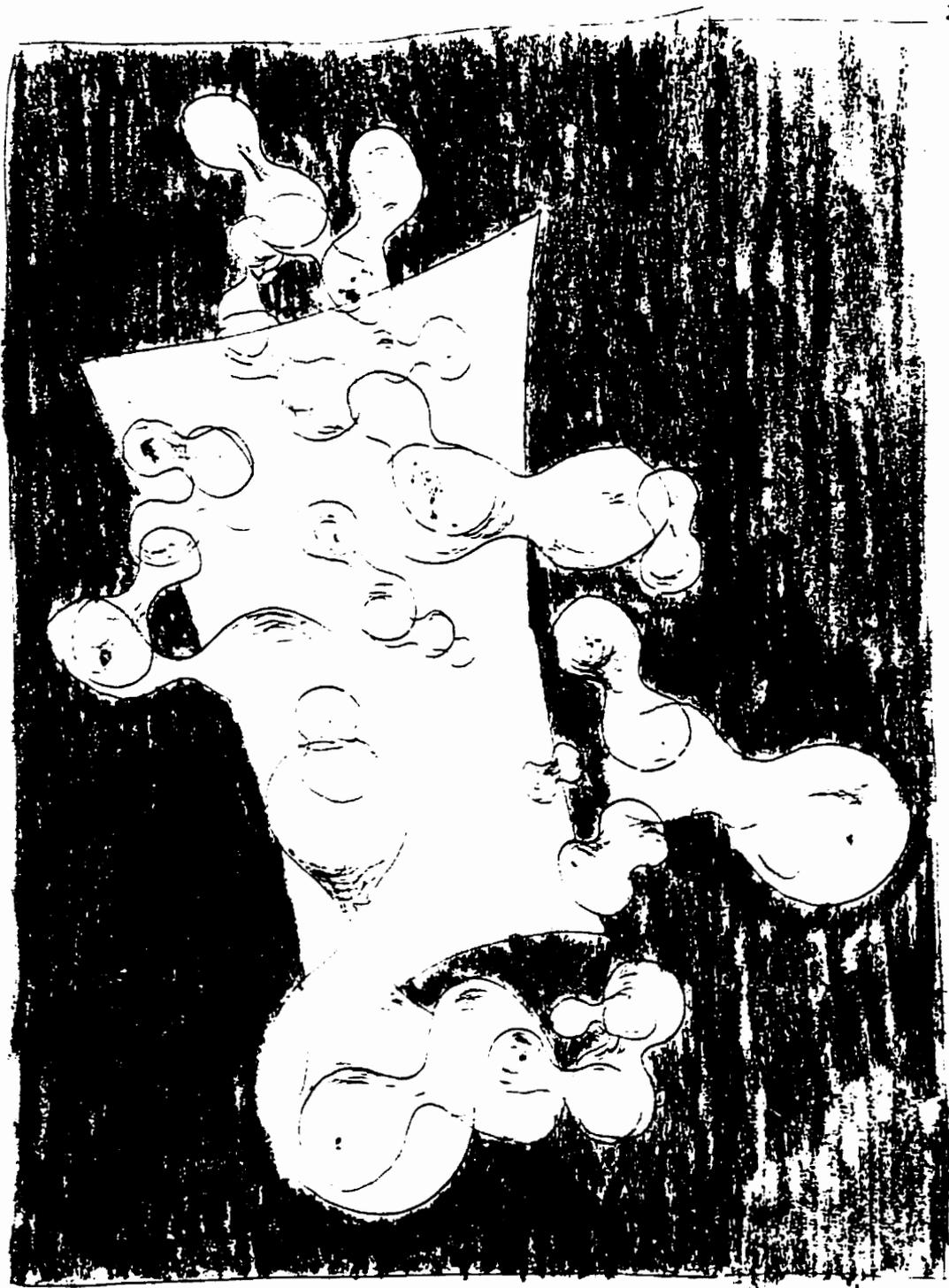
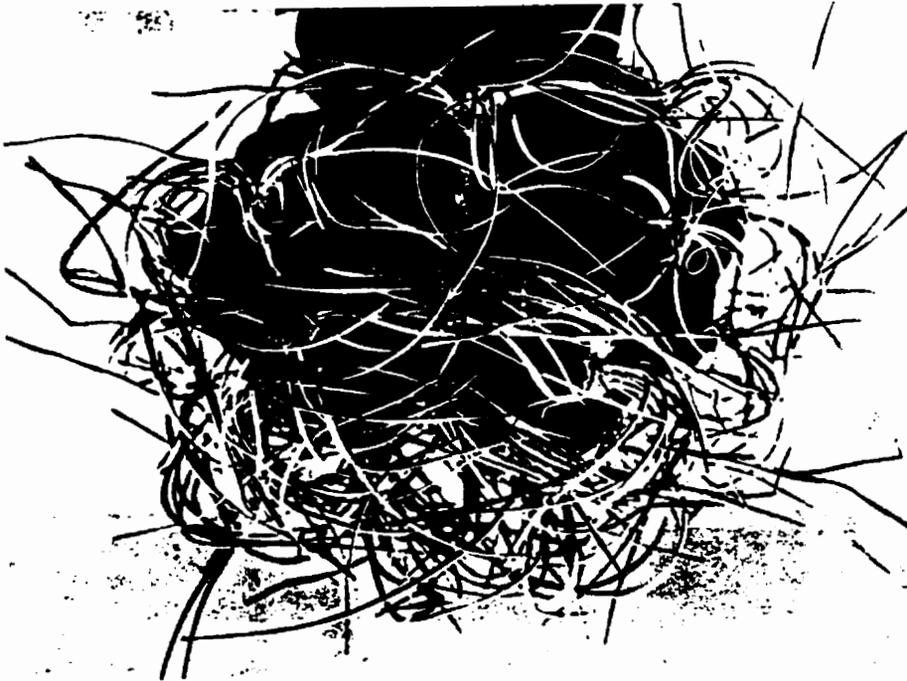


Figure 4-26



Cactus

Photo: RENGEL-PATZSCH
Auriga Verlag



Flowering cactus

Photo: RENGEL-PATZSCH
Auriga Verlag

Figure 4-27



Flock of cranes in flight

A fine organisation of light and shade, effective in itself, apart from the picture motif.

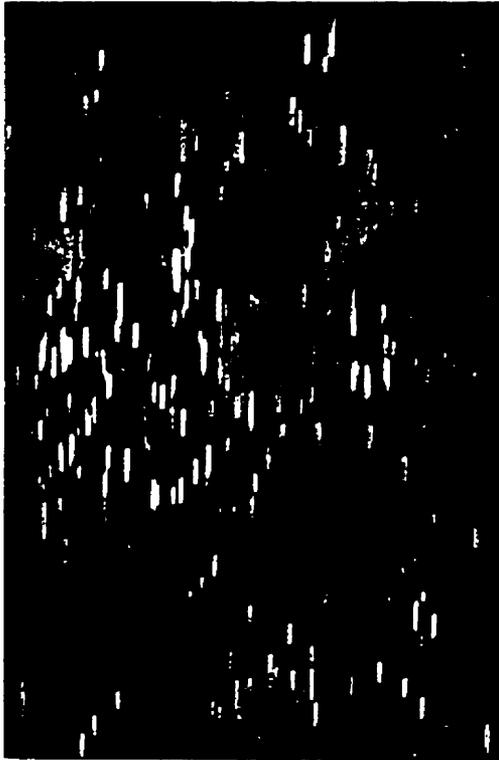


Flight over the Arctic Sea

Photo ATLANTIC

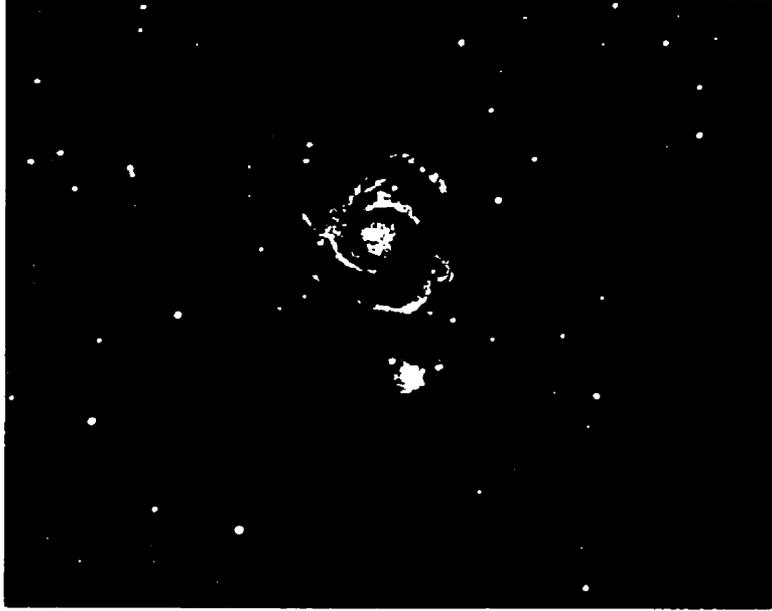
Repetition as a space-time organisational motif, which, in such wealth and exactitude, could be achieved only by means of the technical, industrialised system of reproduction characteristic of our time.

Figure 4-28



Star spectra photographed with prismatic lens

Photo OBSERVATORY
AREQUIPA



Spiral nebula in the Hounds

Photo RITCHIEY

Figure 4-29



Abb. 17. Ein Teil des Fixsternhimmels mit dem großen Nebel bei S Monocerotis



Abb. 19. Nebelstreifen an den Sternen der Plejaden Aufnahme der Torres-Sternwarte im Jahre 1901

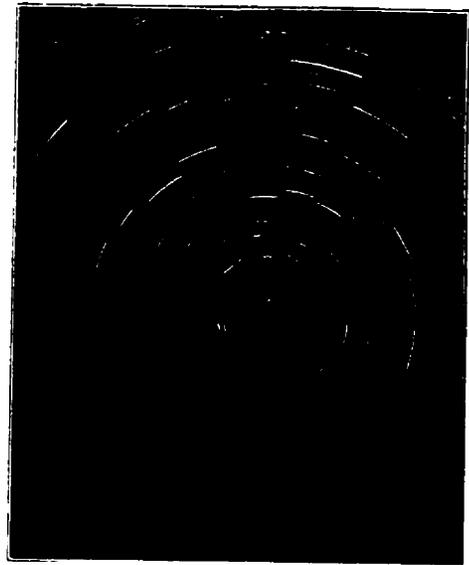


Abb. 18. Himmelsphotographie aus der Gegend des Polarsterns. Das Fernrohr folgte hierbei nicht den scheinbaren Bahnen der Sterne. Durch gezeichnete sich diese als Kreise ab, und die Achse ihrer Bahnen wurde sichtbar.

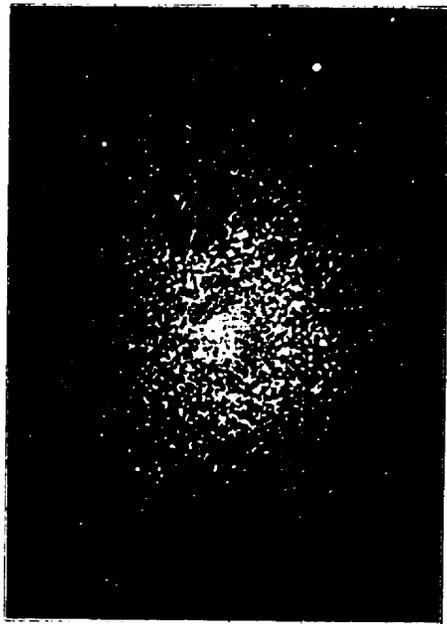
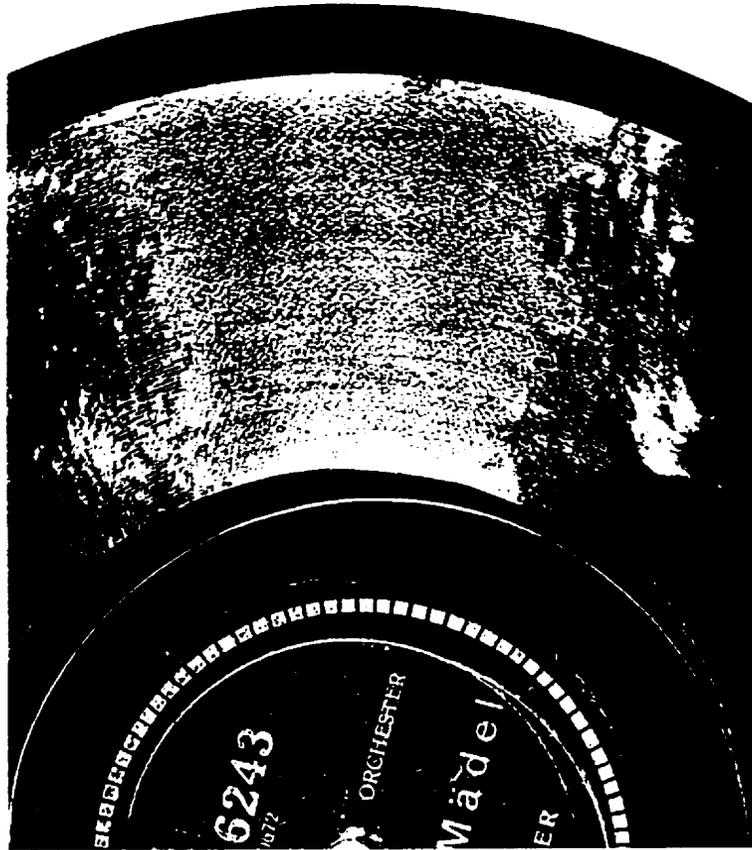


Abb. 20. Sternhaufen im Sternbild des Centaurus. Herschel und Kant hatten diese Sternhaufen nicht, bis von W. Struve nach Art unserer Milchstraße

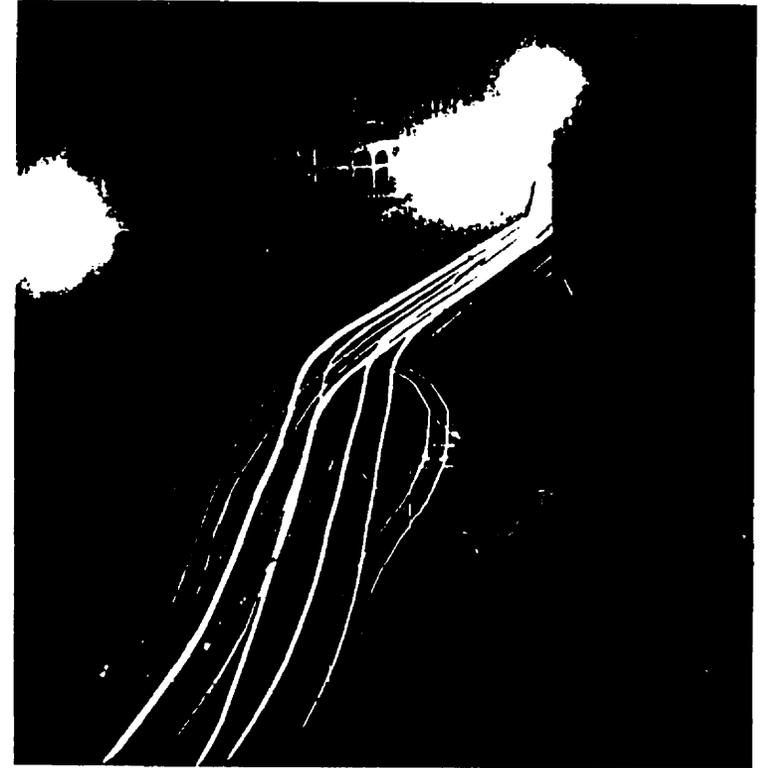
Figure 4-31



Gramophone record

Photo **MOHOLY-NAGY**
at Von Lobbbecke's

Heightened reality of an every-day object. A ready-made poster.



Night shot

Photo **GRUNEWALD**
BREMEN

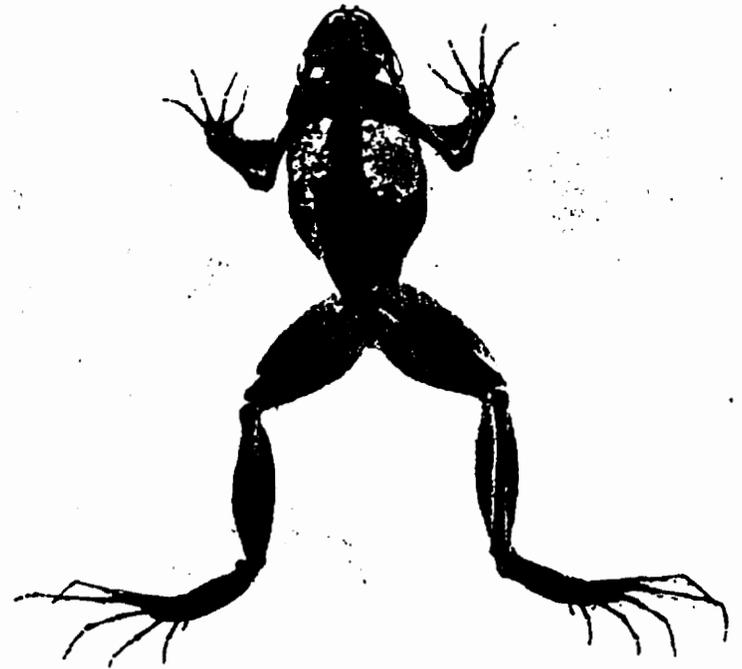
The light trails of the passing cars and trams

Figure 4-32



PHOTOGRAPHIC SAMPLES X ray photo AGFA

From the book
Einführung in die Röntgenfotografie
by Dr. Phil. John Eggert



Frog

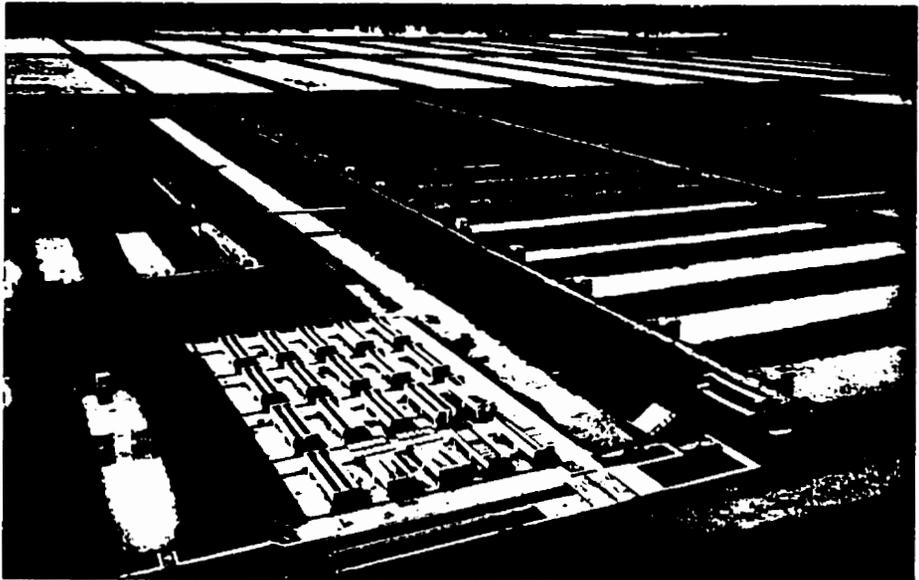
X ray photo SCHREINER/WEIMAR

Penetration of the body with light is one of the greatest visual experiences.



Zebra and gnus in East Africa

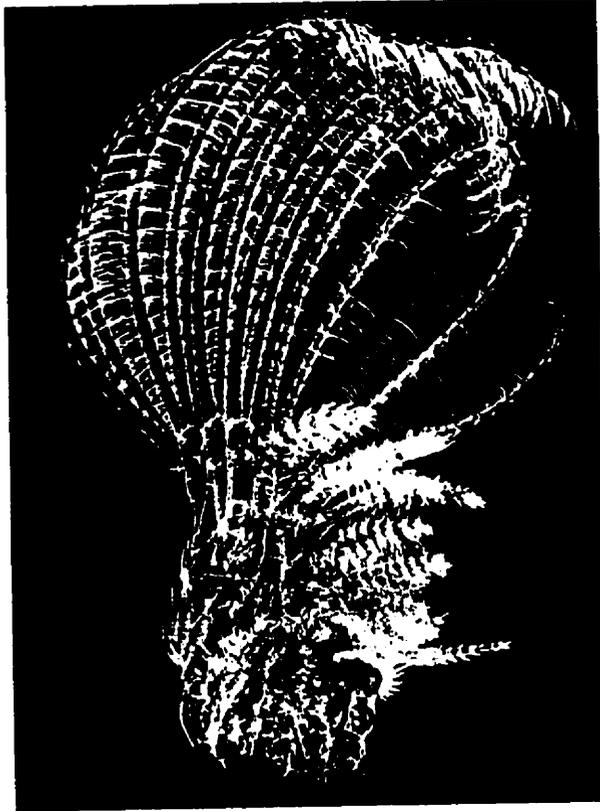
Photo MARTIN JOHNSON
From the Berliner Illustrierte Zeitung



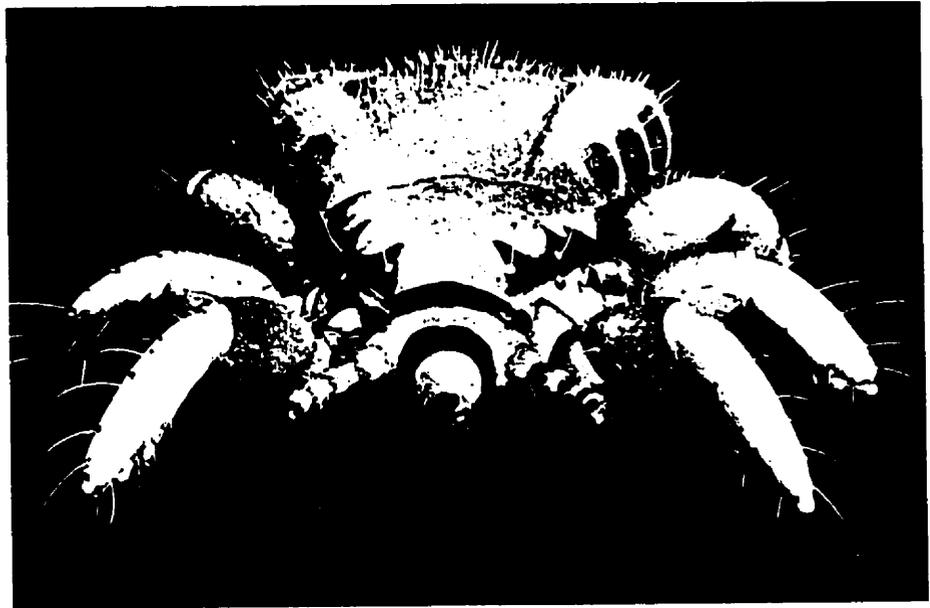
Pond-fishing
experimental station, Bavaria.

Photo LOHOFENER

Figure 4-33



Cirrous feet of a barnacle
Photo F. M. DUNCAN



Enlarged photograph of a head-lice

Photo ATLANTIC

Figure 4-34



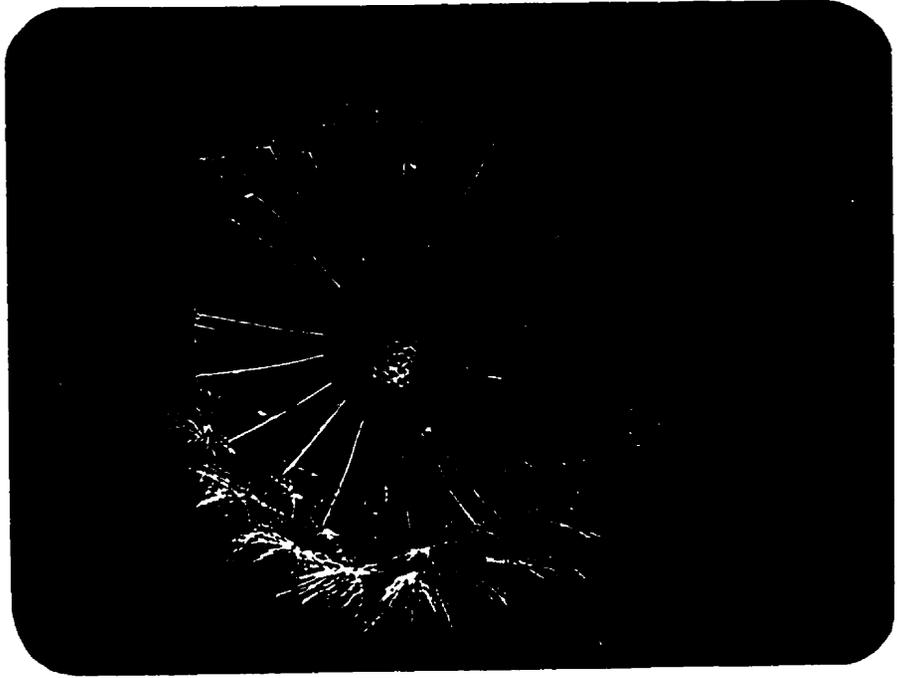
EUPHORBIE. Beispiel einer Pflanzenform, deren Struktur den Eisenträgern ähnlich ist. Das Prinzip geringsten Materialaufwands zur Ausübung einer Funktion ergibt hier wie bei dem Bild unten eine ähnliche Form. Aber in der Natur kommt hinzu, daß die Wachstumsenergie von der Wurzel vom Keim aus wirkt und sich im Rhythmus ergibt, der seinen Ausdruck in den Blattansätzen wie in den Stachelwüsten findet. Atmosphärische Einflüsse, Strahlen, Ströme, Bodenverhältnisse erlauben nicht eine ungestörte Auswirkung der Wachstumsenergie, sondern schaffen jene scheinbaren Zufälligkeiten, die wir in der Natur so bewundern. Alles ist in der Natur ein Teil und ist mit dem All verwachsen

**FUSS EINES EISEN-
RAHMENS FÜR EIN
KESSELHAUS.**

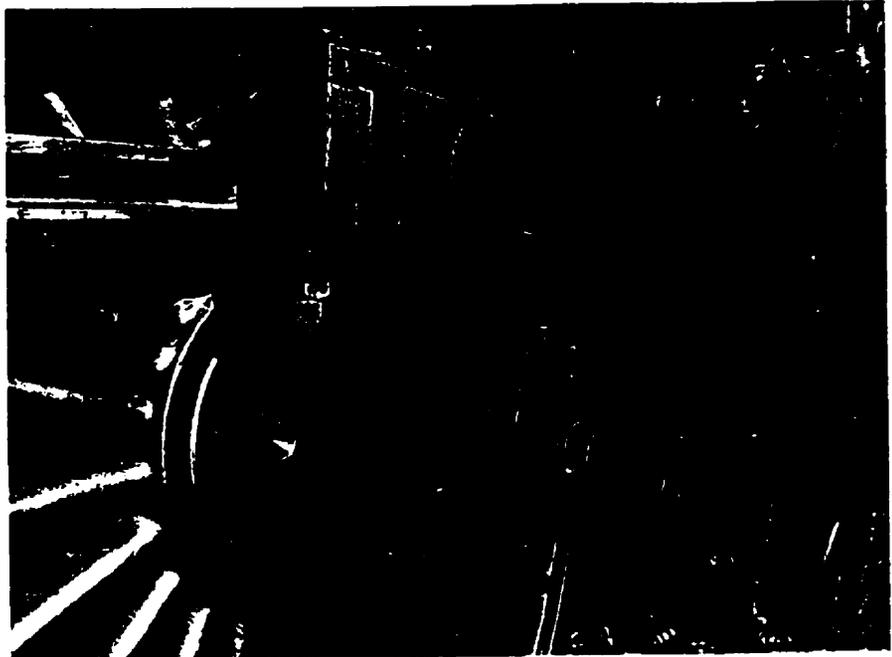
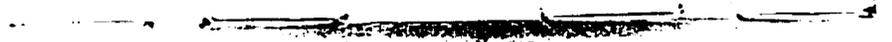
Gleichmäßiges Verteilen der Last, Materialstärke und Druck, alles ist berechnet und gemessen. Nur die berechneten Kräfte finden ihren Ausdruck, alles Zufällige und Nichtgewollte ist möglichst ausgeschaltet. Systematische Ordnung schafft klare möglichst geometrische Formen. Die technische Form verhält sich zur Naturform wie eine mathematische Kugel zu einer gewachsenen Beere



Figure 4-35



Dr. BERGNER
From photo archive Berlin



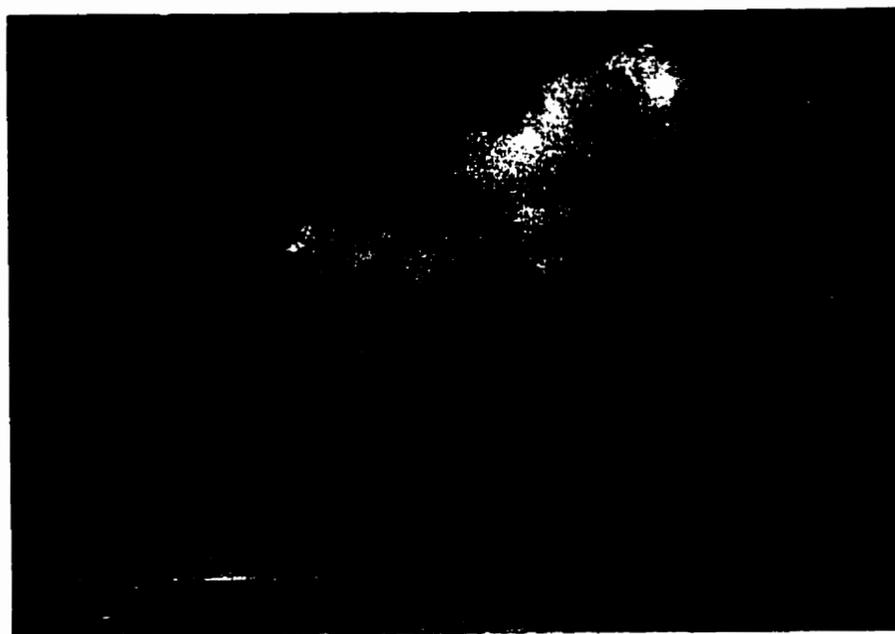
ALBERT BENGEL-PATZSCH D W R

Figure 5-1



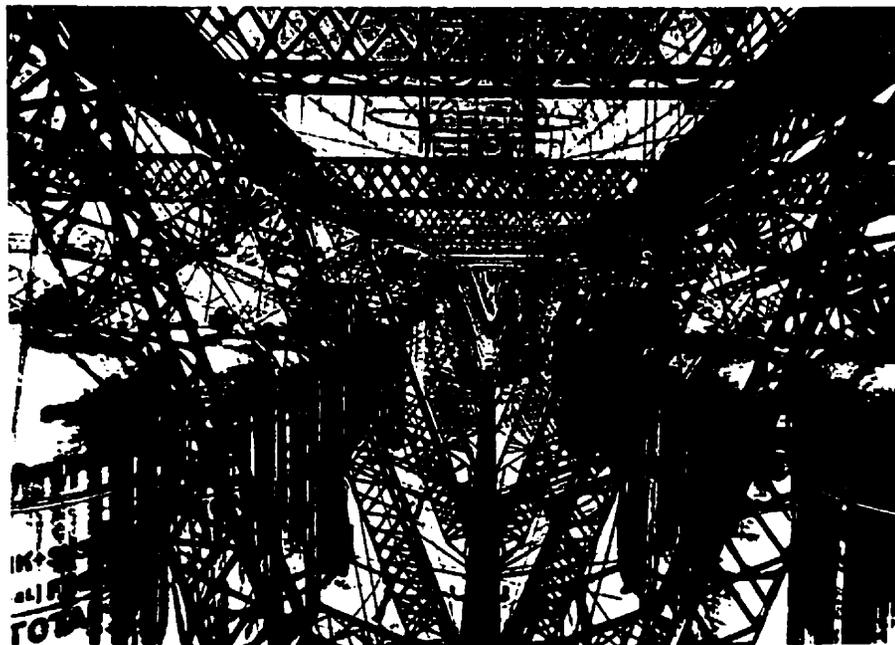
PHOTO

CHARLOTTE BE DODD



STUDIO - BE DODD

Figure 5-2



EXTERIOR VIEW OF ZEPPELIN

INTERIOR VIEW OF ZEPPELIN

Figure 5-3

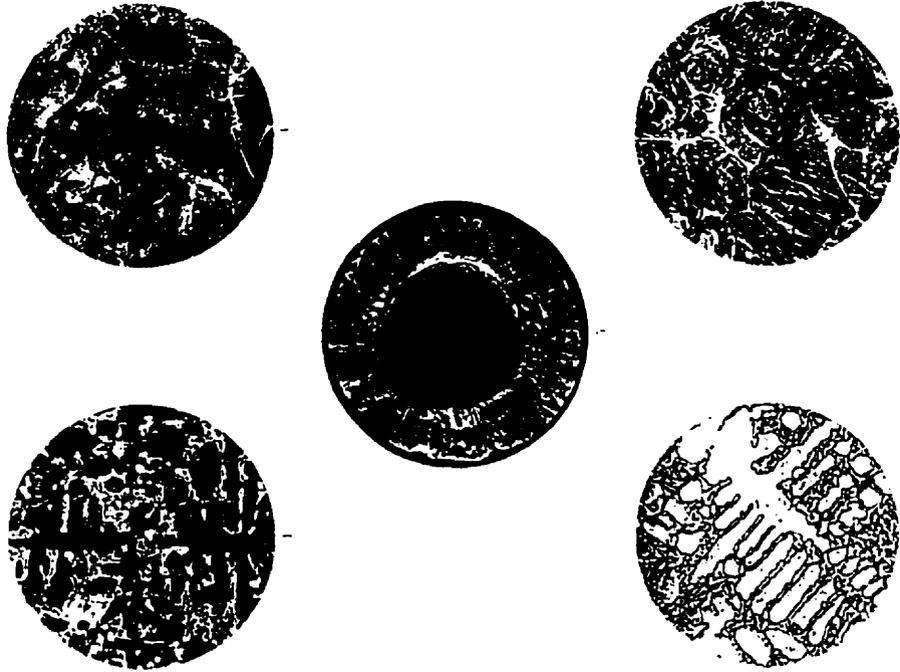


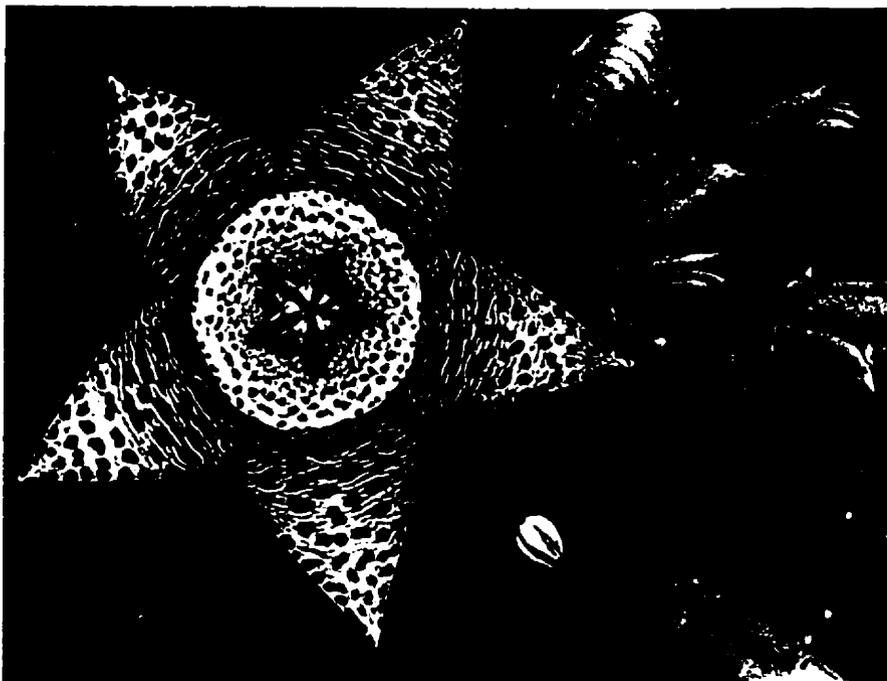
PHOTO BY S. H. HARRIS
MILITARY MEDICAL RESEARCH AND DEVELOPMENT CENTER



PHOTO BY S. H. HARRIS

Figure 5-4

115



ALBERT L. HOPKINS

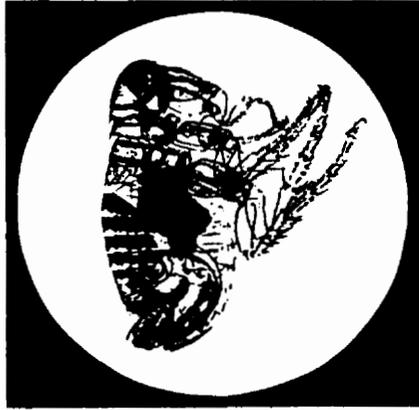
ALBERT L. HOPKINS

114



ALBERT L. HOPKINS

Figure 5-5



Dr. BEHREND
FLOH Mikrophotographie
Leben (aus Arbeit: Berlin)

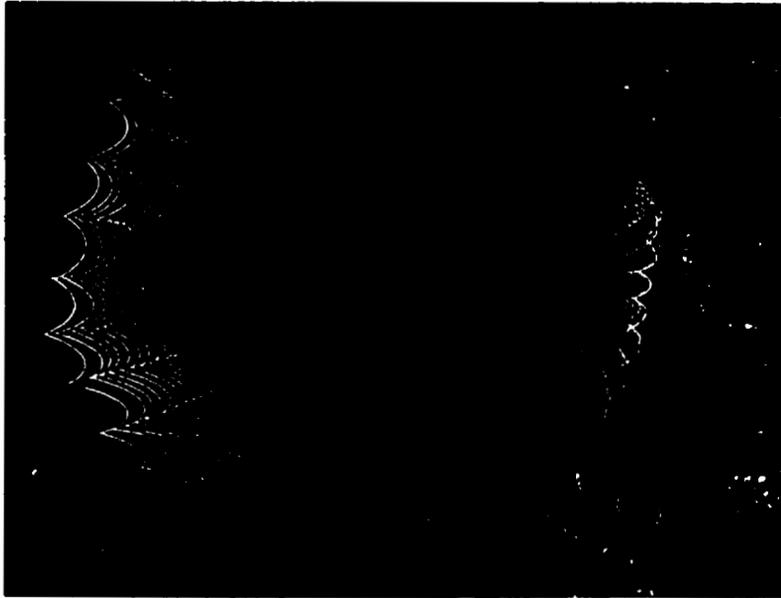


Dr. BEHREND
FLOH Mikrophotographie
Leben (aus Arbeit: Berlin)



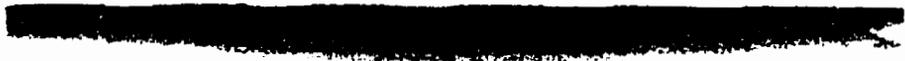
Dr. BEHREND
FLOH Mikrophotographie
Leben (aus Arbeit: Berlin)

Figure 5-6



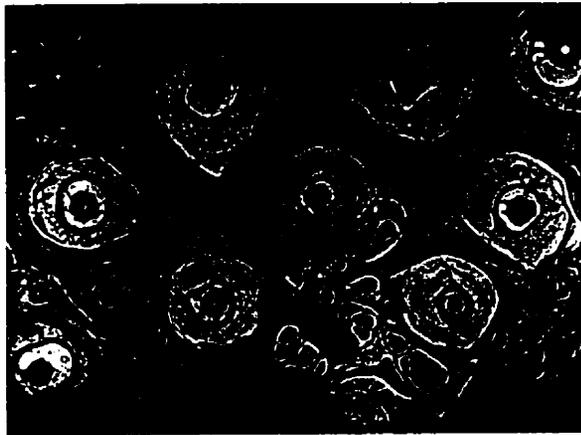
BEREITS SPINNENNETZ

V. F. MUSEK

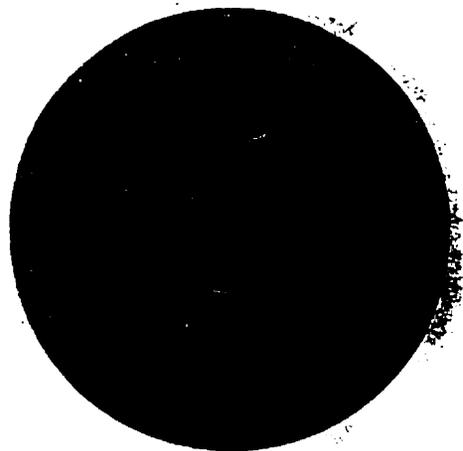


ORIG. VON WOLF - SONNEN UND STERNENBEGLEITER DER MILCHSTRASSE

Figure 5-7



KARL HANSEN HAARE MIKRO-QUERSCHNITT



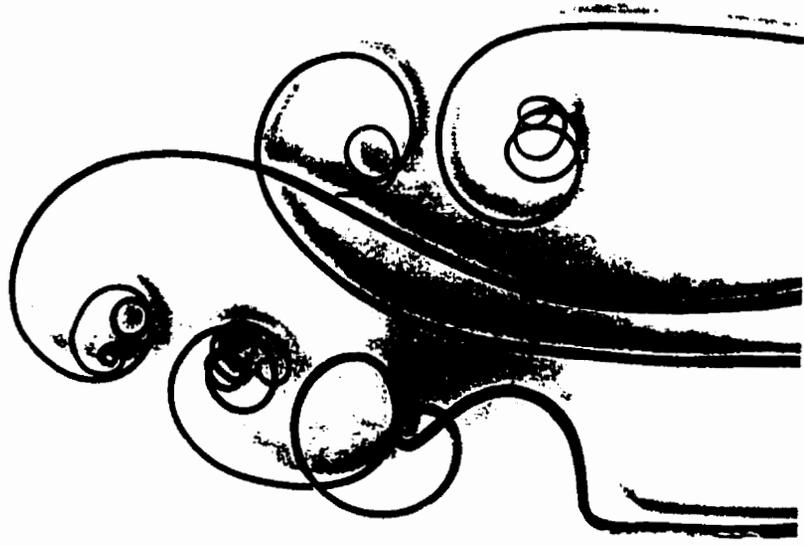
PROF. DR. MAX WOLFF HILFENSGRUPPE MIKRO VORDERANSICHT

Figure 5-8



BUCHER BRENNWEIN 151001

PROF. KARL BLASSHOLD



BUCHER ZAMMEL 151001

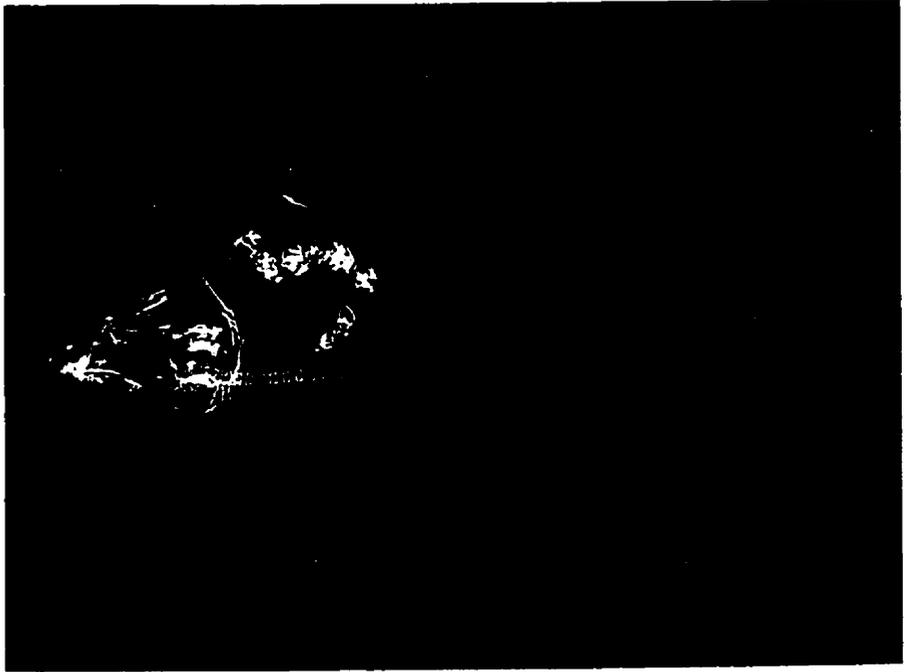
PROF. KARL BLASSHOLD

Figure 5-9

PHOTOGRAPHIE DE LA CHASSE

PHOTOGRAPHIE DE LA CHASSE

01



02



PHOTOGRAPHIE DE LA CHASSE

PHOTOGRAPHIE DE LA CHASSE

Figure 5-10

SS.

kettenläden
für gute herrenkleidung
berlin in allen stadtteilen
hamburg große bleichen 52

das klassische muster der unauffälligen eleganz
beherrscht die herbstmode 1930

jedem zu den 3 SS.-einheitspreisen
eine neue leistung der SS.-eigenfabrikation:
bessere ware — billiger verkaufen

68.-
anzug fischgrau, blau und schwarz
reines merino-kammgarn
mit der haltbaren eleganten SS-kunstseide
gefüttert

85.-
ulster-paletot
aus reinwollen fischgratstoffen
in den dezenten modetönen

118.-
ulster-paletot
aus reinwollen orig. englischen stoffen
in unauffällig eleganter diagonal-musterung

Figure 5-11

film und foto 1929

von mitte mai bis mitte juli

stuttgart

werkbund-ausstellung

film-

sondervorführungen

in den
königsbau-lichtspielen

foto-

ausstellung

in den
städtischen
ausstellungshallen



Figure 5-12

**WOHIN GEHT DIE
FOTOGRAFISCHE ENTWIC**

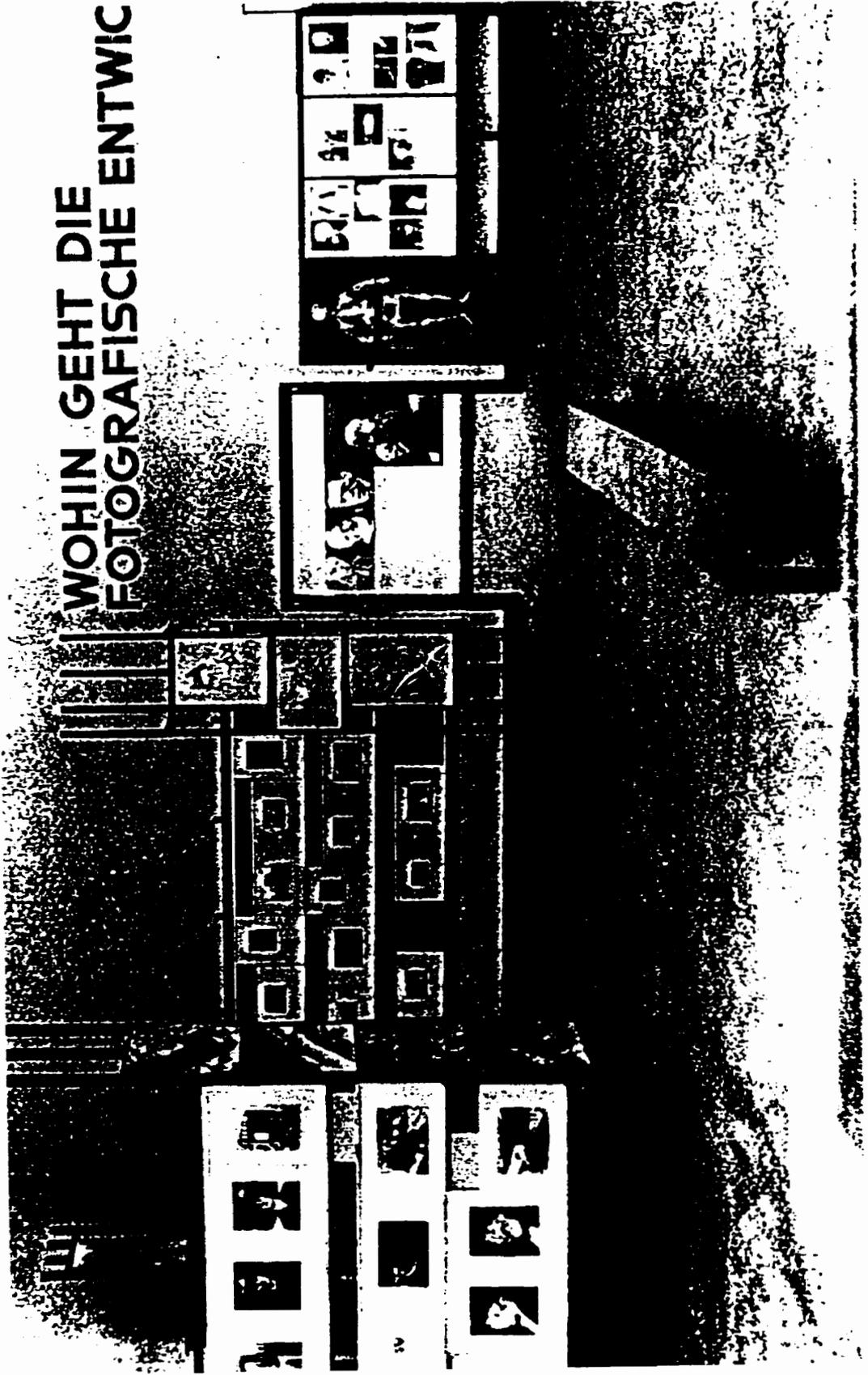
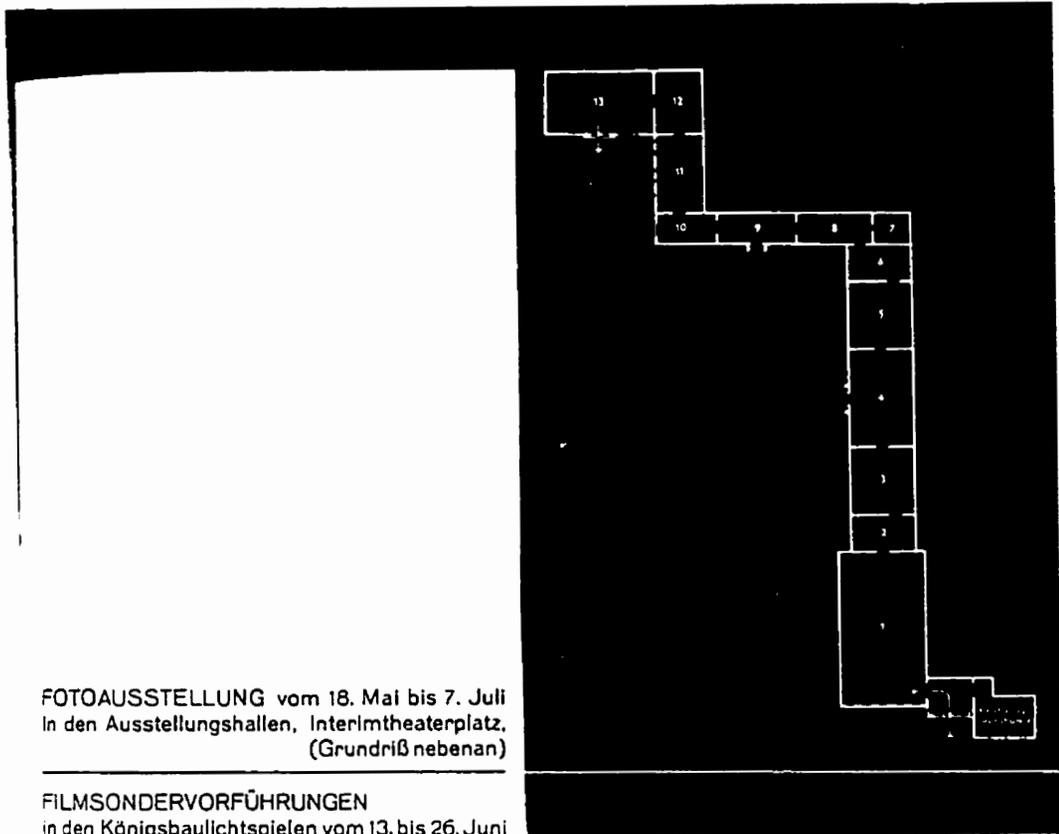


Figure 5-13



INTERNATIONALE AUSSTELLUNG

DES DEUTSCHEN WERKBUNDS

FILM UND FOTO

STUTT GART 1929

Figure 5-14

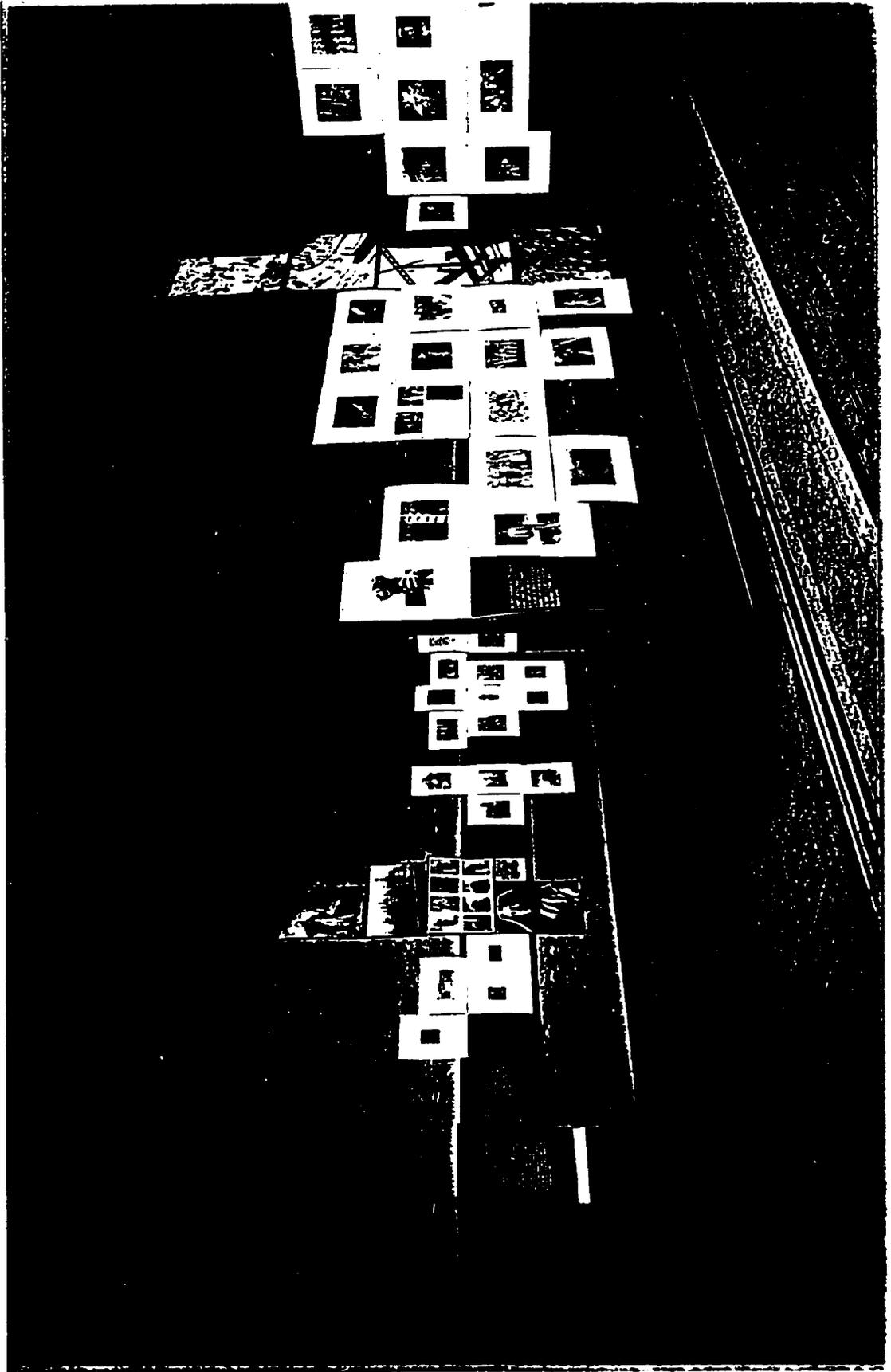


Figure 5-15



Figure 5-16

bauhaus

zeitschrift für gestaltung • herausgeber hannes meyer • schriftleitung ernst kallis •
die zeitschrift erscheint vierteljährlich • bezugspreis jährlich rmk 4 • preis dieser doppelnummer rmk 2 40 •
verlag und anzeigenverwaltung dessau zeröster straße 16 •

2/3
2. jahrgang
1928



h. kahnke, hotel lehringer
stuttgart



hannes meyer, h. frank schäfer
stuttgart



just schmitt, j. staßler
stuttgart



ernst kallis, h. ar. schlemmer
stuttgart

Figure 5-17

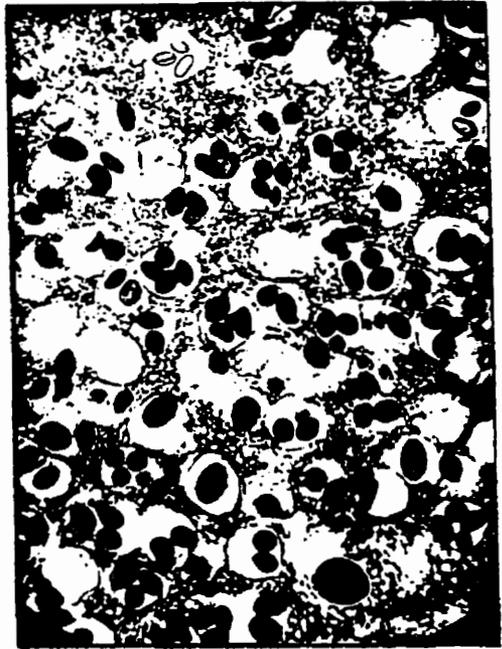


Figure 5-19



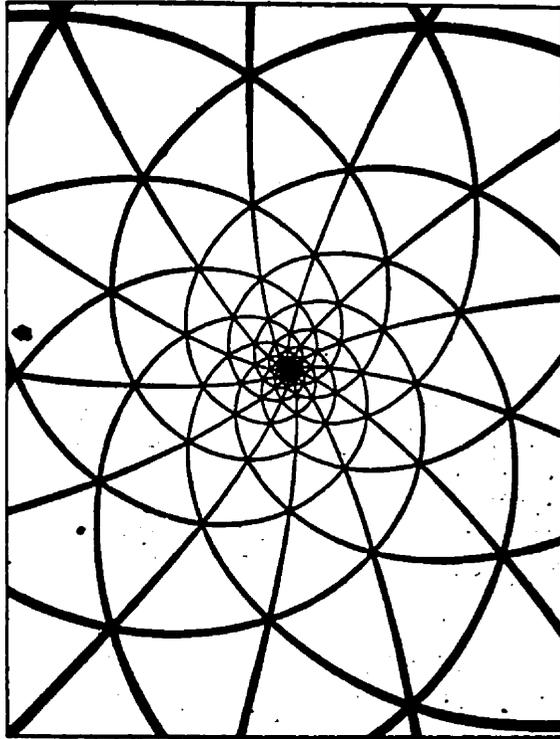
Figure 5-20



Figure 5-21

60

K Á L L A I E R N Ó



A T E R M É S Z E T
R E J T E T T A R C A

22 K É P P E L

M I S Z T Ó T F A L U S I

Figure 5-22



FRANK KUPKA. URBANUS



KAPONZATJÉ KÉPESZEMÉSZETE. TUNYKUP

Figure 5-23

