

Change of Paradigms

Translated by Elizabeth Wilson and Andreas Ströhl

The division of the history of the West into antiquity, the Middle Ages, and modernity is questionable, but nevertheless not arbitrary. In these cases, the issue was a change of paradigms, involving changes in living, feeling, and thinking, changes obvious not only to us, at our historical distance, but also to those affected by them.

Equally dubious, but still not arbitrary, is the present talk about “post-modernism” and/or “posthistory.” This lecture has the intention of confirming that we too can and must note a profound change in our modes of living and thinking up to now and in our feelings and wishes.

In order to realize this intention, it would be necessary first to sum up the actual paradigms, in order to illustrate the present change. This, however, is not advisable. Instead, the attempt will be undertaken to get a grip on some aspects of the transition from the Middle Ages to modernity and then to use this as a starting point for describing the current shift.

1. *Material and form.* Artisans are people who stuff material into forms. For instance, wood into the form of a table. This gesture is called “work.” The medieval interpretation of this gesture goes like this: the forms are hidden behind the appearances, the theoretical glance can see them; and they reveal themselves to faith. One of these forms is the form of a table. The artisan sees it and he tries as well as he can to stuff it with wood. He does not completely succeed in this because the material defends itself from being informed. The theoretically trained and faith-enlightened glance of the bishop penetrates the work (the wooden table) and establishes the degree to which the artisan has managed to stuff the

material into the form. He establishes the value of the work. The authority of the bishop rules the market: *praecium iustum*.

The bourgeois revolution of the Renaissance can be seen as dismissing the authority of the bishop and introducing the free market. This implies an alteration in the question of forms. The revolutionary artisan denies having theoretically recognized the form of a table or having experienced its revelation in faith. He claims that previous artisans invented it and that he, in the process of his own work, can improve it. This modern notion that forms are not fixed ideas but plastic models, that they can be modeled, that they can be progressively improved, and that therefore the works express fashions or modes is expressed in the word *modern*.

Thus, the word *theory* also changes its meaning. It no longer denotes the contemplating of fixed, unchanging ideas but active modeling. It dialectically opposes observation, on the one hand, and experiment, on the other; for I have to observe the appearances before I work out a model for them and I must try out my model in order to see how good it is. So modern scientific technique enters the stage.

Thus the attitude toward value also changes. Work, then, is that gesture thanks to which models are worked out and progressively improved. This is why work is the source of all values. There are no eternal values that can be recognized theoretically or reveal themselves to faith. There is no idea of a perfect table, of a perfect society, of a perfect human being. All values have to be worked out. The modern work ethic—recently crystallized as liberalism, on the one hand, and Marxism, on the other—follows from this.

We are no longer modern. We can no longer ask the question of the relation of material and form like this because we no longer share the modern analysis of work and therefore the modern work ethic. We have been led to a postmodern view of this problematic by the industrial revolution. To us, the work process looks like this: machines work. These devices are an opening (input) through which raw material flows in order to flow out of another opening (output) as products. In the middle of the machine is a tool. It bears the form of the product that is to be created and it mechanically stamps this form onto the raw material that flows by it. An example is a machine through whose input plastic flows, whose tool bears the form of an ink pen, and out of whose output plastic ink pens stream. A critique of these mass-produced ink pens shows that their value results neither from the raw material nor from the machine nor from the human beings who work at this machine, but from the form in

the tool. It is thanks to this form that ink pens can write. This is why the source of all work is to be found not in the worker but in the software.

From this point of view, work consists of two phases: a soft phase in which human and artificial intelligence design forms, often from numeric calculations, and a hard one in which these forms are mechanically, often automatically, stamped upon raw material. The second phase, that is, the one that in modernity was regarded as true labor, is inhuman because it can be mechanized. A constantly decreasing part of society participates in this phase. A constantly increasing part is occupied with producing forms, information taken in the widest sense, in the so-called tertiary sector. This quantitative shift alone explains the downfall of Marxism. For the question of who has power and makes decisions has thus shifted. It is not the owner of machines but the information specialist (not the capitalist but the systems analyst and programmer) who holds the power.

But this shift has not only quantitative consequences. The word *theory* has recently undergone a change in meaning. The numerically generated forms of all values that are to be materialized, that appear on computer screens (projects for ink pens, airplanes, or also for formerly unimaginable objects), are without space and time, though able to be modeled. Because they have been numerically generated, they are just as free of space and time as algorithms. That is, whoever contemplates these forms on computer screens has an understanding of theory that is related to that of the classical period and the Middle Ages. The postmodern science that is based on a purely formal theory such as this will necessarily have to lead to a no longer modern technology. The issue will no longer be to work out models for materials, but rather materials for models: no longer a form of a table for wood, but not yet existent materials for worked-out forms. From this technique emerging from formal theory, we can expect alternative worlds. *Cyberspaces*, for instance, give a foretaste of this. We postmoderns are no longer subjects of a given objective world but projects for alternative objectified projections.

2. *Heaven and earth*. In order to make the preceding easier to comprehend, let me refer to a second aspect of the transition from the Middle Ages to modernity. The medieval image of the world looked approximately like this: The world is a ball. In the middle, the earth, above it water, above that air, on the outside fire. Between air and fire, the orbit of the moon draws an ontological limit. The eternal, perfect harmony of spheres, the heavenly order, rules above the moon. Thanks to astronomy and faith, we gain some insight into this. The sublunary world is a mess.

Stones (pieces of earth) are being thrown into the air, water penetrates the earth, air gets into the water, but divine justice brings everything into order again: tossed stones fall back to the earth, water rises from the earth as a spring and falls from the air as rain, and every fire rises as flames to the sky. Down here under the moon, every movement is unjust and must be righted, and everything we do on our own is sin. Judgment Day will come and the heavenly order will also be erected in the sublunary world. Heaven on earth will be established.

This image of the world is recorded in written form in Aristotle and in the Bible; its correctness can be empirically perceived everywhere. All scientific, philosophical, and theological theories offer proofs of it. The medieval political and social order reflects this *Weltanschauung*. And the sharp division of the world into heaven and earth is also the basis for the division into spiritual and worldly power: pope and emperor. The image of the world is therefore incontestable; it is always everywhere and by everybody taken as valid. It is in this sense catholic.

This image of the world collapses, nevertheless, in a catastrophe that is no longer comprehensible. Disorders in the heavens (for instance, mountains on the moon) become visible and transgress the separation of heaven and earth. Newton finally succeeds in trying to blend the heavenly and the earthly mechanics (Copernicus and Galileo) into one. In this modern image of the world, the Copernican revolution (sun [that is, fire] instead of earth in the center) is less revolutionary than that of Galileo. The things of the world (on earth as well as in the heavens) now move without a motive because of inertia. They no longer commit sins and they are also no longer judged. Any mover of the world becomes a superfluous hypothesis. The law of inertia alone is sufficient as an explanation for movement. The world, heaven as well as earth, is an inert, inanimate, absurd structure, and we can rule it.

In order to do that, we first have to perceive it. Omniscience (science) is necessary for omnipotence (technology). And here appears an epistemological problematic that is characteristic of modernity. The inert world is a thing with extension. We, who stand opposite it, are thinking things. To perceive means to assimilate thinking to extension. The world is geometrical and we ourselves think clearly, that is, arithmetically. Therefore, to know the world is to tag all the places of the world with numbers. But this Cartesian method of analytic geometry is not sufficient. We have to fill up the intervals between the numbers or else the world slips through our fingers. Thanks to differential calculus, we actually succeeded in this. But even after Leibniz, the Kantian epistemological question is

still open: how is science possible? This doubt characterizes the whole of modernity. The radiant building of the Newtonian image of the world comes into being on the rubble of the old, catastrophically destroyed medieval image of the world. However, it cannot pass on the lost faith.

We no longer share this doubt in the same way: we now doubt differently. We are no longer modern. The unification of the heavens and the earth into a single universal world in which the same mathematically formulatable laws are valid everywhere has proven to be temporary. The Newtonian building has fallen apart—not into two parts, as in the Middle Ages, but now into three. And these three parts are not distinctly separated, as were heaven and earth in the Middle Ages; rather, they deeply interlock everywhere. And that looks approximately like this:

We are forced to split up the things and processes of the world into three orders of magnitude. In the medium order of magnitude, which is measurable in our measures, that is, in centimeters and seconds, Newton is still valid. In the big order of magnitude, that is, the one measurable in light-years, the Einsteinian rules are valid. In the small one, which is measurable in micromicrons and nanoseconds, the rules of quantum mechanics are valid. In each of these three worlds, we have to think differently, try to imagine differently, and act differently.

And yet we cannot separate the three worlds, in order, for instance, to make a sandwich image of the world. For everywhere, the small world interferes with the medium one (for instance, Chernobyl), the medium one with the big one (for instance, astronautics and aeronautics). The formal incompatibility of the three worlds and their interpenetration makes the following doubt appear on stage: Is it not so that our mathematical way of thinking is projected from us outwards to strike back at us in the shape of three worlds? Is it not as if we had designed out of ourselves the structure of algorithms and theorems, which is the framework of the world, and as if we then had forgotten about it and now laboriously fetched it back? Is it not as if we only discover what we ourselves have invented? This is the postmodern, posthistorical doubt.

And at this point, the reflections concerning heaven and earth meet the other ones concerning material and form. The doubt just mentioned means that the pluriverse with its three worlds is perhaps our own projection. And this means implicitly that we can also put next to the universe of science other worlds that can just as well be known, experienced, and treated. It means that it makes little sense to differentiate between what is given and what is made, between data and facts, between true and false, between real and fictitious, between science and art. It means that

all these modern categories have to be thought differently in favor of different ones, if we are no longer subjects but projects. It means, for example that, instead of “true and false,” we have to put “probable and improbable.” Instead of “real and fictitious,” “concrete and abstract.” And instead of “science and art,” “to formulate and to project.”

This attempt to catch hold of the present change of paradigms at two ends and then knot them together is necessarily fragmentary. And it can lead to errors: for instance, if it were proclaimed here that post-modernism were solipsistic. On the contrary, if we assume that the world is our projection, then we assume as well that we ourselves are nothing but this projection. And this reversible ontology (no subject without an object, as well as no object without a subject) is a basic posthistorical feature. As I said before, all this has only been indicated in a fragmentary manner in this lecture. And the forms of consciousness and action that come into being out of the paradigms that I have sketched have not even been indicated. This has necessarily been so and has only partially to do with the time limits that were imposed on this lecture. The real reason for this is that we, I think, are situated within a change of paradigms that we cannot yet foresee. I have nevertheless dared speak about it because this is the first opportunity to utter, in the town of my birth, some of the thoughts that keep me busy.

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Contents

Acknowledgments	vii
Introduction	<i>Andreas Ströhl</i> ix
What Is Communication?	3
On the Theory of Communication	8
Line and Surface	21
The Codified World	35
Criteria—Crisis—Criticism	42
Habit: The True Aesthetic Criterion	51
Betrayal	58
The Future of Writing	63
Images in the New Media	70
On the Crisis of Our Models	75
Change of Paradigms	85
Taking Up Residence in Homelessness	91
Exile and Creativity	104
A New Imagination	110
Mythical, Historical, and Posthistorical Existence	117
Photography and History	126
A Historiography Revised	132
The Vanity of History	138
On the End of History	143
Waiting for Kafka	150