

8. A Blend of Marxism and Neopositivism: A. A. Bogdanov

POLITICAL EXPERIENCE

A. A. Malinovskii, who wrote under the pseudonym of A. A. Bogdanov, was associated with three major developments in the general theory of society in Russia. He made an elaborate and refreshingly original effort to weld the social theory of Marx and Engels and the "scientific philosophy" of neopositivism into a modern system of sociological theory. He adduced elaborate arguments in favor of the sociology of knowledge as a special discipline concerned with the systematic study of the genetic and functional relationship of ideology to social structure. And he had the vision and skill to lay the foundations of a general theory of organization, a forebear of cybernetics and general systems theory.

Born in 1873 to the family of a public-school teacher, Bogdanov graduated with high distinction from Tula gymnasium and immediately enrolled in Moscow University's Department of Natural Sciences.¹ In 1894, he was exiled to Tula by the police authorities because of his participation in the student movement. Deeply involved in propaganda activities among the workers of a local weapons factory, he was at first a spokesman for Populism but gradually transferred his allegiance to Marxism. His lectures delivered for various workers' circles were the basis for *A Short Course in Political Economy* (1897) which went through many editions and was translated into several Western European languages. A comprehensive and rather original survey of Marxist economics and sociology, the book reaffirmed the orthodox Marxist idea that political economy was the only social science approaching the methodological rigor of the natural sciences and that the analysis of social structure was its primary task. In a review published in 1898, Lenin praised Bogdanov's "clear and correct" presentation of political economy as a science "concerned with the historical development of social relations in production and distribution."² In the autumn of 1895, Bogdanov enrolled in the medical school of Khar'kov University and immediately became active in local Social-Democratic circles. Soon after graduation in 1899, he was sent to a Moscow prison for his participation in revolutionary circles and early in 1901 was exiled first to Kaluga and then to Vologda where he remained until the end of 1903. While in exile, he worked for a while as a psychiatrist in Kuvshinov, near Vologda. In 1902, he helped edit the

symposium *Essays on a Realistic World View*, a critique of the *Problems of Idealism*, edited by P. I. Novgorodtsev.³ When the Social Democrats split into the Bolsheviks and Mensheviks in 1903, Bogdanov, still in exile, joined the former.

Early in 1904, Bogdanov went to Switzerland and was immediately elected to several ranking positions in Bolshevik organizations, serving at the same time on the editorial boards of several newspapers. He returned to Russia in time to take part in the revolution of 1905 as a Bolshevik representative in the St. Petersburg Soviet of Worker's Deputies; he also edited *The New Life*, a Bolshevik journal published legally during "the days of freedom" at the end of 1905. He was arrested again, but instead of being sent to prison he was ordered to leave the country. Unknown to the police, he stayed for a while in Kuokkala, Finland, sharing a dacha with Lenin. Although selected to serve on the central committee of the Social-Democratic party in 1907, his views on both the revolutionary philosophy and current political tactics brought him into conflict with more orthodox Marxists. In 1907, he argued with his close friend Lenin: after the dissolution of the Second State Duma, Lenin thought it advisable for the Social Democrats to take part in the forthcoming elections for the Third Duma to assure themselves of contact with legal and semilegal labor organizations. Bogdanov, on the contrary, was the chief spokesman for the so-called maximalist group, which advocated a full boycott of the election and a total retreat into illegal activities.⁴

In *Materialism and Empiriocriticism*, published in 1909, Lenin portrayed Bogdanov as a marionette dancing to the tune of Machian epistemological "idealism." The enforced isolation from official Bolshevik activities led Bogdanov to broaden his participation in the work of various fringe groups of unorthodox Marxists; he was particularly close to persons, typified by Maksim Gor'kii, who contended that a political and economic revolution could be successful only if it were preceded by an ideological, or cultural, revolution. Small wonder, then, that Bogdanov dedicated his utopian novels—*Red Star* and *Engineer Menii*—as well as several essays of programmatic nature, to the tasks of cultural revolution.

After the October Revolution, Bogdanov rejected all invitations to rejoin the Bolshevik party. He was elected a regular member of the Socialist (later Communist) Academy, a new organization concerned primarily with elaborating the theoretical legacy of the fathers of Marxism and with training new cadres of social scientists in the spirit of historical materialism. He was the leading light in the early history of the *Proletkul't*, an organization dedicated to advancing "the fourth form of labor movement: the creative role of the workers' class in culture and ideology."⁵ (The other "forms" covered politics, economy, and management.) He left the *Proletkul't* in 1921, when by becoming a "cultural organ" of the Bolshevik party it lost the last vestiges of autonomy. While writing essentially on the various aspects of

“cultural work” among industrial labor, he found time to complete the last phase of his monumental work on a general theory of organization. His ideas exercised a strong influence on contemporary writing in the sociology of art; and his theory of “moving equilibrium” in the development of society found a way into N. I. Bukharin’s widely noted work on the formal principles of Marxist sociology. He occupied a prominent position among Marxist dissidents engaged in an uphill battle to bring dialectical materialism in tune with the broad philosophical implications of Einstein’s theory of relativity. His idea that “the form of economic organization” determined “the mode of production” dominated the thinking of most early Soviet historians of precapitalist societies.⁶ On top of it all, he founded one of the world’s first institutes to engage in an experimental study of blood transfusion. He died in 1928, at the age of fifty-five, a tragic victim of an experiment which he performed on himself.

Bogdanov’s voluminous writing is part of a tireless search for a general science of society. The function of science, according to him, is to enrich the store of knowledge helping man to find his place in nature and society. Of all scientific questions, the most important is the one concerned with the main line of social development and the basic indices of social progress. A trustworthy answer to this question can come only from a scientific study of “the basic laws of social life,” a study which has introduced the most daring and the most confusing chapters in the annals of scientific thought. The major deficiencies of the traditional theories of society stemmed from the personal predispositions and interests of scholars and the awesome complexity of social life. Bogdanov claimed that it was not until 1859 that the first decisive step was made in the search for a scientific study of the structure and dynamics of human society. In that year, Marx published *A Contribution to the Critique of Political Economy* in which he set down the guiding ideas for a general scientific theory of society. Bogdanov thought that in an introductory statement Marx presented the essence of scientific sociology:

In the social production which men carry on they enter into definite relations that are indispensable and independent of their will; these relations of production correspond to a definite stage of development of their material powers of production. The sum total of these relations of production constitutes the economic structure of society—the real foundation, on which rise legal and political superstructures and to which correspond definite forms of social consciousness. The mode of production in material life determines the general character of the social, political, and spiritual processes of life. It is not the consciousness of men that determines their existence, but on the contrary, their social existence determines their consciousness. At a certain stage of their development, the material forces of production in society come in conflict with the existing relations of production, or—what is but a legal expression of the same thing—with the property relations within which they had been at work before. From forms

of development of the forces of production these relations turn into their fetters. Then comes the period of social revolution. With the change of the economic foundation the entire immense superstructure is more or less rapidly transformed.⁷

Bogdanov contended that, during the first four decades of its existence, Marx's theory had helped explain "a mass of historical developments" and had not encountered serious opposition from other theories. Many able writers enriched it by having helped it to expand its competence over new areas of sociological problems. However, history was not at a standstill. Particularly in science, many changes of revolutionary proportions, such as Darwin's theory of evolution, raised serious questions that Marxist theory could no longer ignore. "Although the theory of historical monism did not cease to be true in its basic claims, it was no longer satisfactory."⁸ It was incomplete: it did not explain a wide range of social problems. For example, it did not explain why every society needs ideology and what the relationship of ideology to economy is. Also, it suffered from an imprecise definition of the "economic structure" of society. Bogdanov wondered why Marxist theory treats law as part of the superstructure when, in reality, it is the basic element in the articulation of the social organization of production. The Marxist theory of social change, according to Bogdanov, was very much in need of establishing closer relations with new scientific (particularly biological) theories of change. Marxist theory continued to be isolated from modern psychology, founded on physiology, which was well on the way to becoming an exact science; nor did it take a stand on the accelerated mathematicization of science. After forty years of existence, Marxist sociology continued to imitate the natural sciences, even though these dealt with phenomena "which are essentially homogeneous, simpler, and more general."⁹

Bogdanov devoted the main part of his writing to an effort to harmonize Marxist theory with recent developments in science and philosophy. This devotion took him a long way from some of the fundamental principles of Marxist theory; indeed, the differences between his and Marx's theories are more pronounced than the similarities. While Plekhanov was quick to label Bogdanov's theory "a categorical denial of materialism," a more sympathetic critic wrote: "Bogdanov's studies stand in sharp contrast to the usual rumination of quotations from Marx and Engels and their commentators; they represent an effort to rely on solid content rather than on cloudy metaphors used by many advocates of historical materialism as substitutes for scientific formulations, and to advance new arguments in favor of Marxist theory."¹⁰ Soviet critics noted correctly that Bogdanov did not limit himself to a reappraisal of individual components of Marxist theory but, on the contrary, articulated a complete system of philosophical and sociological thought in opposition to Marxism. According to one Soviet critic, he differed

from other revisionists in that he made his ideas in philosophy, political economy, and sociology integral parts of a substantively and logically unified system of theoretical principles.¹¹

During the last few years of his life, Bogdanov was the target of bitter attacks published in the leading journals of the Bolshevik party. Numerous adversaries attacked his ambitious efforts to replace Lenin's epistemological objectivism by a theory of knowledge steeped in neopositivist subjectivism; to substitute a mechanistic interpretation of the processes of nature and society for the Marxist dialectical interpretation; and to blur the differences between the infrastructure and the superstructure of human society.

The evolution of Bogdanov's general theoretical orientation and interests can be divided into three phases. A commitment to a special brand of historicism—a general theory of social dynamics based on a synthesis of mechanical and evolutionary views of nature—gave the first phase its most distinctive feature. During the second phase, Bogdanov worked assiduously to formulate a new philosophical system—which he labeled empirio-monism—based on an original synthesis of Ernst Mach's epistemology and Marx's sociology. The work on a general theory of organization, an early version of cybernetics that he named *tektology*, provided the essential characteristic of the third phase.

HISTORICISM: A SYNTHESIS OF DARWIN AND OSTWALD

Although political economy was the initial path taking Bogdanov into the realm of sociology, all his subsequent concern with sociological thought was part of an intensive search for a philosophical system intended to satisfy the fundamental principles of Marxist theory and the logical and epistemological needs of twentieth-century science, both natural and social. He entered the philosophical arena in 1899 with the *Basic Principles of a Historical View of Nature*, which marked the beginning of the first phase in the evolution of his theoretical thought. In this study he elaborated a "historical view" which, in essence, blended the Newtonian static view of nature with the Darwinian dynamic view. Combining the two views into a paradigm, he regarded historical change as universal, causal, and relative.¹² Change is universal in the sense that it applies to both nature and society with the same regularity; it is causal in the sense that it has no room for teleological explanations; it is relative inasmuch as "human knowledge has no access to unconditional and absolute truths."¹³ The emphasis on the relativity of historical knowledge brought Bogdanov into conflict with orthodox Marxists, who claimed that the laws of historical development are absolute. He also rejected "dialectics" as a label for the inner logic of historical change. In none of his subsequent writings did he change his opinion on this matter.¹⁴

Of all Bogdanov's works, *Basic Principles* was most remote from

sociology: in this book he was preoccupied with the search for a modern philosophy of science that would bring together the latest scientific views and the most modern epistemological theories. However, the work set down a number of basic principles which he later applied to social theory. To Bogdanov science is one and indivisible; therefore, sociology could rise to a scientific level only by operating on the basis of natural science models. He rejected the traditional view of philosophy as a discipline standing apart from and above science; he also argued that sociology should not be submerged in philosophy but should depend on its own substantive claims and methodological tools. At one time, he argued that the improvement in the scientific standards of sociology and other disciplines would lead to the demise of philosophy as a mode of inquiry and a body of knowledge.

In *Knowledge from a Historical Point of View* (1902), Bogdanov proposed a schema of concepts and propositions treating human society as an integral part of nature, subject to self-adjusting natural processes and precise scientific measurement. He used Ostwald's theory of energy as a model for a new theory of knowledge and an interpretation of the historical succession of social systems. The theory of energy rested on two pillars: the law of the conservation of energy and the law of the full measurability of natural processes. The law of the conservation of energy was the same as the law of the uniformity and continuity of natural processes; this is also expressed in the statement that in nature everything must issue from something else, that nothing in nature is *sui generis*.¹⁵ This law makes the study of the interaction and succession of the natural phenomena the basic task of science. The law of the full measurability of natural processes denotes that mathematical methods can be employed fruitfully in the entire universe of scientific inquiry, that mathematics supplies the essential tools for every science. Bogdanov conceded, however, that since all natural phenomena cannot be treated on the same level of generality, the scope and nature of the mathematical method varies from science to science. For example, the study of biological data requires a less generalizing treatment than the study of physical data.

The energy orientation contributed to a major redefinition of "causality" as the key explanatory mechanism of the work of nature. Indeed, Bogdanov thought that the fundamental transformation of the meaning of causality was the most revolutionary development in nineteenth-century science.¹⁶ The classical law of causality considers cause and effect as discrete (and, therefore, static) phenomena set off from each other both quantitatively and qualitatively. The energy theory is concerned, not with cause and effect as distinct phenomena, but with the processes involved in causal sequences. It represents the last and decisive step in uprooting the static notion of nature. The basic contribution of the energy orientation, according to Bogdanov, is that it shifts the focus of scientific inquiry from ontological to functional

aspects of nature: modern science no longer asks what nature and society are but how they work.

Based on the notion of the unity of the sciences, the energy view justifies and makes mandatory the use of natural science models in the social sciences. In the social sciences, the energy approach is the same as the historical approach: it places the primary emphasis on the interaction of social processes, particularly on the relationship between technology and ideology, the two universal categories of social processes.¹⁷ Social processes are to human society what the transformation of energy is to nature in general: they depict the continuity and measurability of social change. Bogdanov's sociological theory, at least as formulated in *Knowledge from a Historical Point of View*, is both historical and monistic. It is historical inasmuch as it places the primary emphasis on the dynamics of social processes; it is monistic inasmuch as it interprets all phenomena of social dynamics as specific adaptations to increases and decreases in social energy and inasmuch as it operates on the assumption that human society manifests a spontaneous tendency—which it shares with organic nature—to eliminate internal contradictions and to strengthen harmonious relations.¹⁸ In his earlier sociological theory, Bogdanov was much closer to Comte's emphasis on social consensus than to Marx's emphasis on class warfare as the key to the mysteries of organized social life.

Bogdanov was concerned primarily with applying the energy approach to the study of the evolution of knowledge as an index of the evolution of human society: he equated the study of the socialization of knowledge with the study of the inner dynamics of social relations and the main lines of social progress. Knowledge, as the moving force of history, is not an epistemological but a sociological phenomenon. "An analysis of cooperative relations between social groups provides the basis for a study of general forms of knowledge, characteristic for the entire society; an analysis of cooperation within individual groups provides the basis for the study of special ideological tendencies."¹⁹

Despite a heavy dependence on natural science models, Bogdanov recognized that sociology, dealing with unique problems in logic and methodology, is quite different from physics. In the first place, a sociologist cannot conduct experiments; he must rely completely on observation as a source of data. In the second place, in his observations, a sociologist faces life with infinitely complex concrete details, all products of multiple influences.²⁰ The problem facing sociology is how to reduce the unlimited complexity of concrete situations and divergent influences to simple conceptions capable of scientific treatment. Without a reduction of the multitude of complex observations to limited simple notions, the sociologist can *describe* the universe of his inquiry, but he cannot *explain* it. To be a scientist, he must resort to an abstract method which, in turn, has two

characteristics: it is deductive, for it draws general conclusions by testing and verifying hypotheses; it is historical, for it concentrates on social processes dominated by discernible "tendencies."²¹ Bogdanov noted that the basic task of the abstract method is to detect the "tendencies" of social processes that reveal regularities of scientific import.

Regularities in social change, as recorded in cognitive culture, are the central theme of Bogdanov's sociology. He considered adaptation (a concept borrowed from Darwin's biological theory) the key process revealing the regularities of social change. In his view, social selection (a transposition of Darwin's "natural selection") of the most effective techniques for the satisfaction of changing social needs is the main mechanism of adaptation. It is also the key concept in the sociology of knowledge: in the study of the selection of adaptive techniques at a specific point of history, Bogdanov saw the surest method for discovering the social criteria of truth. The function of the sociologist is to illumine the processes of selection for the purpose of unraveling the "least relative" and "most objective" criteria of truth—the criteria that reveal the regularities in the processes of history.

As presented in his earlier studies, Bogdanov's general theory of society lacks structural unity. He provided a detailed—and in places a profound—logical analysis of what he considered to have been the pivotal concepts of sociological analysis; but he did not tie these concepts to an empirical base. His theory is a pure theory, not a guide for empirical research. His main contribution lay in pointing out the vast scope and enormous usefulness of a sociological study of knowledge. The unpopularity of Ostwald's determined efforts to transform the energy theory into a comprehensive philosophical system with implicit metaphysical leanings proved to be an important factor in Bogdanov's decision to search for new theoretical models for his general theory of society. However, he showed no inclination to return to Marxist orthodoxy; paramount in the subsequent development of his sociological theory was an elaboration of the thesis that "the social being and social consciousness are one and the same thing."

EMPIRIOMONISM: A SYNTHESIS OF MARX AND MACH

Although there are recognizable differences between the various phases in the evolution of Bogdanov's philosophy, the unity and consistency in the development of his thought can not be questioned. From the very beginning, he elaborated a philosophical view that regarded knowledge as a social product, gave primacy to technology over ideology, and treated "adaptation" and "selection" as universal concepts which make human society an extension of the natural order.

In *Essays in the Psychology of Society* and *Empiriomonism* Bogdanov advanced a set of propositions giving a firmer and more comprehensive

footing to the notion of human society as an integral part of nature, subject to self-adjusting processes and to mathematical measurement. While pushing Ostwald into the background (but never abandoning him), he found new inspiration and ample models in the “scientific philosophy” of Ernst Mach and Richard Avenarius, with whom he was united not by common scientific interests but by a common theory of knowledge.²² He named his new philosophical system “empiriomonism” and defined it as a synthesis of Mach’s and Avenarius’s theory of knowledge and Marx’s theory of social history. The strong point of empiriomonism, according to Bogdanov, is its full congruence with the ethos of modern science and technology. This ethos places the primary emphasis on knowledge that is not only practical but also economical—knowledge that avoids circuitous and imprecise philosophical and logical procedures.

Empiriomonism rejects the mechanistic orientation in science as an ideology rooted in the custom-bound organization of social labor in the seventeenth century. The ideology of the new technical intelligentsia, elaborated by the new philosophy, is a response to the historical need for rapid technological advancement; it minimizes the role of “sacred values” in industrial work and encourages continuous search for practical inventions. The new philosophy and the ideology of technical intelligentsia are similar in yet another respect: both reject the notion that scientific laws have independent existence. Instead, they regard scientific laws as transitional products of the human mind—special methods for meeting the challenge of practical social needs.²³

Empiriomonism, like the neopositivistic philosophies of Mach and Avenarius, demands that both philosophers and scientists abandon their traditional concern with the “explanations” of mechanically intertwined phenomena and instead emphasize the “description” of pure forms of experience, which are reducible to mathematical expression. Bogdanov fully accepted Mach’s and Avenarius’s view of knowledge as a derivation from experience, which produces two kinds of “elements”: psychical and physical. Psychical elements consist of sense data and are basically “biological-physiological.” They establish a link between the individual and the outside world; but they are completely subjective, since each man’s experience is unique.²⁴ Physical elements are derived from psychical elements by a “collective synchronization,” that is, by a long distillation of generalized wisdom from personal experience. They are objective for they have a common meaning for human groups; they make up socially functional knowledge which is accepted and integrated through interpersonal communication.²⁵ Psychical elements, on the other hand, are “individually organized experience,” that is, experience cast within the limits of personal life. In brief, psychical elements make up the experience that is dependent on the “individual subject”; physical elements make up the experience

that is dependent on the "collective subject."²⁶ The social scientist must be guided by the axiom that the "social milieu" (as a system of communication) is the major link between man as "the individual world of experience" and the universe as a total experience.²⁷ The institutionalized system of social relations is the structural core of both society and personality.

Both psychological and physical elements are historical: both are products of long historical developments characterized by improvements and enrichments in the bonds which give human experience a structured form. The history of human society is the history of the growing complexity, depth, and precision of man's knowledge of the universe. The history of society is the continuous and accumulative socialization of knowledge—the gradual, but inexorable, expansion of social experience. While the objectivity of physical elements does not have an epistemological basis, for all knowledge is individual—and therefore subjective—in origin, it has a sociological basis, for its regularity and validity stem exclusively from the fact that it is a product and a reflection of social organization.²⁸ Ideology, as defined by Bogdanov, is a vital force in society entrusted with the task of organizing experience into structured knowledge. Although "vital," ideology is not "primary" in social causation: every change of structural significance has its origin in technology rather than in ideology. In its relationship to ideology, technology is the independent motive force of social development.²⁹ Or, "there is one thing that no ideology can achieve—it cannot be a prime mover of social change."³⁰

Bogdanov's empiriomonistic theory of society shows several qualitative resemblances to Marx's theory. It recognizes the "socioeconomic formations" as stages in the "natural history" of social systems; it accepts in principle the Marxian view on the relationship of the infrastructure to the superstructure of major social activities; and it places strong emphasis on strain and stress in social dynamics generated by the accumulative growth of material culture. Bogdanov claimed that he considered his concept of "technical process" identical to the Marxian notion of "social relations in production." Indeed, he recognized Marx as the founder of modern sociology; he emphasized particularly the scientific usefulness of the Marxian concept of social structure and the Marxian claim that the social existence of men determines their consciousness.³¹ He asserted that empiriomonism is a synthesis of Mach's and Avenarius's neopositivist epistemology and Marxian views on social structure.

Despite all this, Bogdanov claimed that Marx's sociological theory suffers from serious shortcomings, most of them stemming from Marx's failure to consider the stream of ideas unleashed by Darwin's evolutionary theory and modern scientific (that is, neopositivist) philosophy. Marxist theory does not explain the deeper meaning of social existence and the role of ideology in modern society; nor does it offer a precise explanation of "economic

structure.” It treats society as totally separate from the universal processes and laws of nature; for this reason, it does not take into account the heavy dependence of sociology on biology. Particularly, as represented by Lenin, it advances the erroneous theory that knowledge is absolute epistemologically (for it reflects the objectively existing external nature) and relative historically (for its depth and reliability are limited by the availability of instruments extending the power of sense organs). To Bogdanov, knowledge is relative both epistemologically (for its origin is essentially subjective) and historically. Bogdanov thought that the absolutizing of knowledge was the principal weakness of Lenin’s *Materialism and Empiriocriticism*.³² While Lenin saw no need for a psychological orientation in sociology, Bogdanov was convinced that society is essentially a psychological phenomenon. Both Lenin and Bogdanov subscribed to what each termed “philosophical monism.” Lenin’s monism is essentially ontological: it is based on the axiom of the material unity of the universe, both natural and cultural. Bogdanov’s monism is mainly epistemological: it is based on the notion of the unity of knowledge, on the idea of “the continuity in the system of experience” and of the unity of “cognitive material” or “psychic and physical elements.”³³ Despite these differences, Lenin asserted that, had Bogdanov only rid his theory of the epistemological influences of Mach and Avenarius, he would have been a true Marxist.³⁴ In making this statement, Lenin weighed Bogdanov’s social philosophy against his practical work for the Bolshevik cause and his unwavering faith in the forthcoming supremacy of the proletariat. Lenin’s criticism did not precipitate Bogdanov’s abandonment of Mach’s and Avenarius’s philosophical influences; it did precipitate his alienation from the cause of Bolshevism.

Bogdanov defines empiriomonism as both an ideology of the productive groups of modern society and a philosophy fully congruent with natural science, the source of the most practical and socially useful knowledge. Empiriomonism, like modern technology and science, is positive and evolutionary and can be easily applied to man’s ceaseless search for gradual improvements in production techniques.³⁵ Philosophical materialism, on the other hand, is too impractical to be of use to the ideology of the modern technical intelligentsia; it is too involved in arguments over the ontological primacy of “matter” or “spirit” to meet the intellectual and technical needs of modern society. Mach and Avenarius—and Bogdanov, too—shifted the emphasis from ontology to epistemology, and made experience, with all its practical derivations, the central topic of philosophical discussion; rather than pursuing an impractical search for the *origins* of historical and social phenomena, they sought to elucidate the social *functions* of these phenomena.

The notion of the derivation of physical elements from psychical elements led Bogdanov to identify his theory of knowledge as “historical monism” and

to claim that this theory differed appreciably from both the epistemological “parallelism” of Mach and Avenarius and the materialist ontology of Marxism. He conceded that differences between psychical and physical experience had been adequately defined by Mach and Avenarius but gave himself credit for having established precise causal ties between the two. In noting that objective or physical knowledge was produced by the socialization of subjective or psychical knowledge, Bogdanov gave credit to Marx for having laid the foundations of the modern sociology of knowledge. He endorsed Marx’s notion that only in social life could human experience become a reality.³⁶

Socialized knowledge, that is, knowledge based on physical elements, appears, according to Bogdanov, in two basic forms: technology and ideology. These two forms apply to different areas of human activity (they are, in fact, two basic types of social processes), but both contribute to social adaptation by integrating and assessing accumulated experience and applying it to social labor.³⁷ Both are systems of knowledge, and knowledge is “the basic tool of human development.”³⁸

Placing the main emphasis on technical forms of social adaptation, Bogdanov argued that every ideology and every change in social forms ultimately derives from the technical process. The term technology, according to him, denotes not the material equipment of a society but the organization and utilization of knowledge related to external nature.³⁹ Techniques are reducible to knowledge, the very essence of human social existence and the primary matrix of social relations. Science is the single most powerful component of the technical process; and it, too, is responsive to accumulative technical needs. “Every scientific advance originates in the sphere of man’s direct relations to nature, that is, to the sphere of ‘technical experience’.”⁴⁰ Ideology, “the entire sphere of social life outside the technical process,” is wholly derived from technology.⁴¹

Technological innovations, as viewed by Bogdanov, are always progressive, for they are based on a continuous accumulation of practical experience. Ideological adaptations are not always progressive. Powerful “ideological survivals,” particularly in class-structured societies, often inhibit both historically necessary ideological adjustments and timely application of new technical discoveries. Technical progress creates the dynamic conditions for social change, but ideology determines the static conditions that regulate and modify technical innovations.

Although ideological elements are secondary in origin and are determined by technical processes, they are nevertheless very important for social development: they play a vital role in organizing the “material” and the “conditions” of social development.⁴² Science, the epitome of the modern age, is a bridge between technical and ideological processes, for it encompasses both practical knowledge and theoretical thought.

Bogdanov viewed the rapidly expanding institutional base of science as the most powerful force forging the theoretical (ideology) and the practical (technology) unity of scientific knowledge. Today, he observed, there are two kinds of scientists: professors who work in university laboratories (and who traditionally were the only professional group entrusted with the development of science) and technical experts working directly in industrial laboratories. Both types of laboratories are novel conceptions, for both are “scientific enterprises” with complex machinery, elaborate physical plants, and close ties with the needs of the economy. The two types of scientists do not differ in training and in social functions: they are two sides of the modern industrial equation. They are “one and the same group.”⁴³ The unity of theoretical and practical science has laid the foundations for the unity of science and philosophy. While philosophy has become indistinguishable from science, the latter has established itself firmly as “the systematization of technical and work experience” and as “the ideology of the ‘productive forces’ of society.”⁴⁴ “Ideology” and “technology,” the wings of the modern scientific world view, are united in their unflinching adherence to positivism and evolutionism, the former based on the denial of knowledge not susceptible to verification and the latter based on the idea of inexorable progress.

Bogdanov constantly emphasized the accelerated growth of secular knowledge as the quintessence of modern civilization. The growth of productive social forces and the resultant expansion of man’s control over nature find a direct expression in scientific knowledge. While beliefs in idols and fetishes express the weakness of human society in its struggle with nature, additions to scientific knowledge mark forward steps in man’s search for the full control of nature. “Where man is not victorious over nature there is the birth of fetishism.”⁴⁵ Bogdanov was concerned with the negative influences of fetishes and idols as much as he was with the positive contributions of science. With regard to fetishes and idols, he stated:

Our life is still steeped in fetishes, and idols are all around us. They guide our behavior and they fill the gaps in our knowledge. The entire economic existence of modern man is permeated by the fetish known as exchange value, which interprets the working relations among men as quantities of things. The entire legal and moral existence is under the influence of idols—of juridical and ethical norms which are presented to members of society not as expressions of their own real relations but as fully independent forces, exercising pressure on men and demanding strict adherence to them. Even in the field of science, the laws of nature are viewed by most people not as real relations among things but as independent realities which rule the world. Polytheism did not die: it has only been twisted and somewhat weakened; from a vivid religious form it has been transformed into a pale metaphysical form. Theoretical knowledge about the real meaning of these idols and fetishes is still

limited; even those to whom this knowledge is available find it almost impossible to rid their everyday activities of a subconscious influence of fetishes. . . . External defeats, inflicted on it by scientific knowledge, did not destroy fetishism but merely reduced its power. But, in any case, at the present time the kingdom of fetishism is thoroughly disorganized and is experiencing accelerated disintegration. Its power over man has been shaken, and its internal links have been strained.⁴⁶

Negative or not, fetishes and idols are social facts. Like scientific truths, they are expressions of accumulated social experience. Although they reflect both the state of technical progress and the basic principles of social bonds, they are merely substitutes for positive knowledge; they are strongest in the areas of social behavior in which science has not asserted itself. But they also find their way into science and philosophy when these serve as expressions of class ideologies. The concept of the "thing-in-itself" is the cornerstone of both the Kantian theory of knowledge and Newtonian mechanics; however in both cases it is a fetish, for it is merely an expression of the search for absolutes, a search sociologically congruent with the authoritative nature of the earlier industrial society. The modern social orientation and neopositivist philosophy have rejected both epistemological objectivism (the knowability of the Kantian "thing-in-itself") and ontological materialism (as embodied in Newtonian science) and have identified themselves with a new ideology which has substituted relativism for absolutism in epistemology, and democratic particularism for absolutist universalism in social and political relations. Not the cognitive impenetrability of the "thing-in-itself" but the dynamics of interacting forces of nature and society is the guiding idea of modern science and modern industrial society.

Bogdanov devoted much attention to functional details of the process of social integration and differentiation. In his opinion, organizational adaptations are the most important processes of integration, operating in both technological and ideological domains. They appear in many forms, three of which—direct communication, cognitive systems, and normative constraints—are of foremost significance.

The most elementary forms of organizational adaptation belong to the general category of direct communication—communication by word and facial expression—which helps coordinate and integrate elementary human activities and psychic relations connected with these activities. "Facial expressions and words represent systems of signs whereby the experiences of individuals are pooled and 'socialized'."⁴⁷ At the lowest level of social development, the entire lexicon consists of a small number of words designating technical activities and the tools of labor necessary in the struggle with the forces of nature. The forms of direct communication are the first instruments which transform the social instinct of the primeval forms of human life into a "higher form of altruism."

Cognitive forms of organizational adaptation consist of conceptions and

judgments, and their complex combinations (religious doctrines, for example), which add to the adaptive power of socially useful knowledge by raising it to increasingly higher levels of abstraction. Bogdanov argued that Marx and Mach were the first to come up with a satisfactory formulation of the social role of knowledge in the struggle for existence.⁴⁸ He was particularly interested in the links between the “forms of labor” and the “forms of knowledge.” “The very character of knowledge depends directly on the character of social labor. Thus, in the epochs in which the forms of labor are stable, conservative, and dominated by habit, knowledge is *static*: all concepts and ideas present the picture of *immobile* and *immutable* nature.”⁴⁹ On the other hand, in societies in which the forms of labor are mobile and mutable, knowledge is dominated by historicism: the idea of progress permeates all thinking and nature appears as a “continuous series of processes.”

Normative forms of organizational adaptation reduce contradictions in social life by limiting particular functions which, if left uncurbed, would create disharmony and conflict. Their origin is in primordial customs, the ancestor of customary law, morality, and positive law.⁵⁰ Bogdanov warned that normative forms—whether expressed in customs and values or in law—have a tendency to become “sacred tradition,” “absolute duty,” or “pure justice” by detaching themselves from the concrete needs and interests of the members of society. The more “absolute” moral precepts and values are, the more removed they are from social reality. Unbridled optimism about the future of human society led Bogdanov to believe that normative (or coercive) forms would eventually lose their *raison d’être* and would cease to exist. He made no effort to document his statement that the more advanced a society is, the less it depends on the normative forms of organizational adaptations.

Bogdanov argued that the more advanced a society is, the more it depends on ideology as a reigning ingredient of the various forms of organizational adaptation. This did not prevent him from comparing the three generic forms of organizational adaptation with the nervous system. The forms of direct communication are analogous to the simple transmission of excitation through nervous cells and tissues from one part of the organism to another. Cognitive forms correspond to the formation and transformation of complex connections between various psychomotor reactions. Normative forms are analogous to the inhibitory functions of the central nervous system. He admitted, however, that the analogy is imperfect for it does not compare two equally complex phenomena but a “whole” (society) with particular parts of an organism.

Social adaptation, an extension of natural adaptation, holds the key for a full understanding of the historical nature of social phenomena. Its basic operative mechanism is social selection, which produces either positive

results, when it creates the forms of adaptation that add to the intensity and plasticity of social life; or negative results, when it brings forth the forms of adjustment that reduce both the quality and the intensity of social energy. While positive social selection produces social progress, negative selection produces social regress.⁵¹ The idea of progress, a dominant theme of classical sociology, is deeply rooted in Bogdanov's system of social thought. To him social progress is an extension of natural progress: just as natural progress is measured by the expansion of living energy and by the diversification of the forms of life, so social progress is indicated by the expansion of social energy and the growing division of social labor, the former contributing to the "fullness of social life" and the latter to social harmony.⁵² Again, just as social progress is an extension of natural progress, so sociology is an extension of biology.⁵³

The task of the sociologist is made difficult by the existence of two different definitions of progress: one definition is objective, dynamic and scientific, the other is subjective, static, and metaphysical. The objective definition regards social evolution as a process leading to a "complete" and "fully harmonious" social existence; the subjective definition views progress in terms of the particularistic values of individual groups or classes. The objective definition views progress as infinite; the subjective definition depicts progress as a finite realization of the ideals of individual groups or classes. The objective definition sees progress as a derivation from the socioeconomic infrastructure of society: to it, morality, as a derivative force, cannot account for social progress. The subjective definition presents progress in moral terms and treats morality as a quality irreducible to the material conditions of life: it operates on the assumption that moral purity is the propelling force of social progress. The objective view of progress is causal: it recognizes no predetermined and transcendental goals and views social life as a product of causally explained activities of infrastructural forces. The subjective view of progress is teleological: it regards the course of history as a gradual realization of a final goal which determines the main lines of social change.

The function of the sociologist, according to Bogdanov, is not merely to formulate a scientific definition of progress but also to examine and combat pseudoscientific notions of progress. He recognizes, however, that, despite its unscientific qualities, the subjective definition of progress must be recognized as an important component of social reality inasmuch as it reflects the thinking and the sentiments of various segments of the population and inasmuch as it reflects elements of dissonance in the interrelations between the vital components of the social structure. The task of the sociologist is to establish the magnitude of discrepancies between the objective and subjective interpretations of progress in specific societies. The sociologist must not overlook the possibility of a congruence of objective and subjective notions of

progress which takes place when group “ideals” concur with “real progress”—when the “ideal” is “an expression, even though a partial one, of historical development.”⁵⁴ “The classes that are unhampered by a narrow range of vision can produce in due course a historical and objective notion of progress. They can both comprehend the historical nature of the ideals of progress and give them an abstract formulation. Such an ideal, expressed by a leading European thinker, is universal cooperation for universal development.”⁵⁵

Bogdanov devoted much attention to the processes of social differentiation, particularly to stratification. While noting that the study of society as “a living whole with a single orientation in the selection of social forms” is the most important task of sociological scholarship, he readily admitted that this approach is correct only up to a certain point.⁵⁶ To do a thorough job, a student of social structure must also investigate the components of society which enjoy relative independence. The division of labor in society inevitably leads to the formation of groups with independent criteria for selecting and incorporating social innovations. In his analysis of social differentiation, stimulated by the division of labor, Bogdanov was concerned particularly with the emergence, evolution, and sociological attributes of social classes. The division of labor in society does not by itself lead to the formation of classes: as long as differences induced by the division of labor do not threaten the fundamental unity of society, they are not social-class ingredients. In this situation, the processes of social selection lead to a harmonization of relations between social “fragments” by working out common organizing principles. But when the emphasis on differences and contradictions is so great that individual social components evolve their own organizing principles then ideologies emerge. Without ideologies, there are no true social classes. Although the base of social classes is in the technical process, they are organized by ideology.⁵⁷ The technical process is the dynamic factor of social selection and adaptation—the motive force of social evolution; the ideological process is the static factor of social selection and adaptation—it “limits, regulates, and organizes” the products of social evolution.

There are several types of class development: the extremes are classical slavery and modern capitalism. All other types are structural variations and combinations of these two types. Slavery and capitalist systems have a common characteristic: the organizing—or dominant—class in each gradually becomes detached from the technical processes of production and in time loses the real organizing functions and becomes a parasitic group.

Despite external similarities, each type of class formation has a distinct origin and unique social attributes. In the ancient type, anchored in the patriarchal natural economy, the organizing power of the masters grew gradually until it covered the total existence of slaves. The bond between the

master and the slave was fixed, that is, it could not be broken by the will of the state. The dependence of the slave on the will of the master was total and irrevocable. The workingman was transformed into a tool of production. The extreme exploitation of slaves by their masters brought about the process of the irreversible decline of the social system built upon the institution of slavery. Technical progress came to an end. Slave ideology did not develop beyond an embryonic state, and class struggle was absent. Degeneration of both classes culminated in the disorganization and destruction of the entire system of social relations.

The capitalist class system originated in the petty-bourgeois organization of production. The entrepreneur controlled only a part of the worker's existence—the working day. The bond between the entrepreneur and the worker was flexible, contractual. This type of class development led to a progressive transformation of the amorphous mass of workers into a collectivity able to respond to the constantly expanding organizational role of entrepreneurs. Fast technical progress, characteristic of this type of class development, stimulated an equally fast development of antagonistic class ideologies and an irreconcilable class warfare. The real source of modern class struggle is in the differential attitudes of the two classes toward technical progress: while the bourgeoisie views technical progress as a vehicle for widening the scope of the exploitation of the working class, the latter sees in it a way to a qualitative, that is, a revolutionary, change in social structure.⁵⁸ Every revolution has a “motive force” and an “organizing force”: irreconcilable contradictions in the social organization of production and class ideologies are the “motive force”; class consciousness is the “organizing force.”⁵⁹ There is no “genetic continuity” and stability in the composition of individual economic collectivities or social classes, for in a capitalist system there are neither kinship nor personal bonds for a stable class organization. In capitalist society social classes are subject to faster change than in any other type of society.

Social classes, Bogdanov noted, are not only specific groups based on distinct positions in the organization of production but are also clearly demarcated subcultures. Since each class has a unique source of experience, many “common” concepts have in reality different meanings.⁶⁰ The class status affects and shapes the entire process of cognition. The meaning of such notions as “idealism,” “ideal,” and “progress” varies from one social class to another. “The bourgeoisie sees regress in everything in which its ideological adversaries see a high point of progress.” Like orthodox Marxists, Bogdanov considered the bourgeoisie and the proletariat the two pivotal classes of modern society; however, unlike orthodox Marxists, he placed considerable emphasis on the fact that between the two class extremes there is “an infinite number of transitions, nuances, and combinations.”⁶¹

Bogdanov was very careful in distinguishing the relations between the proletariat and the bourgeoisie from those between the proletariat and the “technical intelligentsia,” the bourgeoisie’s organizing arm in the process of production. The first relationship is dominated by conflict, the second by cooperation. The first relationship is primarily that of one social class to another; the second relationship is primarily that of one professional group to another. Accordingly, the proletariat’s role in the production process is only partly connected with its social-class identification. While the gap separating the proletariat from the bourgeoisie as two social classes is steadily growing wider, the gap between the proletariat and the “technical intelligentsia,” as two professional groups, is steadily shrinking. Marxist sociologists placed primary emphasis on the conflict between the proletariat and the bourgeoisie; Bogdanov stressed the expanding community of interests of the workers and the “technical intelligentsia.” The work of manual labor is becoming increasingly organizational and intellectual, and has begun to resemble the work of the “technical intelligentsia.”⁶²

Bogdanov dealt extensively with the problem of the “fragmentation of personality” as a source of alienation in industrial society. He advanced a theory according to which the fragmentation of personality was more typical of the early stage of industrial civilization than of the advanced stage. The technology of early industry emphasized strict specialization in production equipment and mechanical processes. This emphasis “crippled the body and the soul of the worker” by narrowing the range of his experience, competence, intellectual endeavor, and social identification.⁶³ Modern industrial production emphasizes “the knowledge of general methods” rather than “the familiarity with infinite details.” It replaces fragmented work assignments by participation in complex systems of the technological process, a prelude to the coming full automation of industrial production. The unity of science as a “systematization of techniques” triumphs over the diversity of rigid specialization. While the early industrial technology reflected the fragmented nature of empirical science, the modern industrial technology reflects the integrated nature of theoretical science. The acute awareness of the unifying patterns of various types of work and the advanced scientific level of production offer the worker a broader scope of experience, responsibility, and intellectual involvement and, thereby, a new and higher integration of cultural values—and of personality.⁶⁴ While Marx saw in the economic organization of modern industrial production the main source of the alienation of the worker, Bogdanov saw in modern technological advances, and in modern science, a new condition contributing to the realization of the “wholeness” of personality. Although he did not argue against Marx’s thesis, he clearly implied that the technological base of personality integration is more fundamental than the economic base of personality fragmentation.

Bogdanov believed that a new society, dominated by the proletariat, would eventually arise; but he was convinced that the proletariat could emerge victorious only by absorbing the progressive traditions of the bourgeoisie and "technical intelligentsia." In fact, he regarded the gradual eradication of the differences in the acquisition, modernization, and dissemination of technical and scientific knowledge as the main factor in the dynamics of social-class relations.⁶⁵ The proletariat, according to him, is a product of the material and nonmaterial culture of the modern industrial society. He wrote: "The proletariat has learned and will learn from bourgeois classes—in this lies one of the sources of its strength. The greatest ideologue of the working class [Marx] understood this from the very beginning. The economic science of bourgeois classes, the dialectical method of Hegel's bourgeois philosophy, the realism of bourgeois materialism, and the critique of capitalist social relations presented mainly by petty-bourgeois utopians—all these Marx incorporated, in a transmuted form, into the basic material of the new [proletarian] ideology. This synthesis contained no eclecticism and no compromises with the bourgeois world view."⁶⁶ Bogdanov stood somewhere in the middle between the Populist sociologists, who treated growing cooperation (Mikhailovskii) or solidarity (Lavrov) as the real index of social progress, and orthodox Marxists, who saw in class conflict the historical force of primary significance.

Bogdanov's theory of social-class dynamics differs from the orthodox Marxist theory in yet another important respect. While he recognized the role of "contradictions" in socioeconomic formations that harbor antagonistic social classes, Bogdanov generally had very little use for dialectics. He thought that both Hegel and Marx, by offering an imprecise formulation of dialectics, invited arbitrary interpretations. Instead of dialectics, Bogdanov stressed "moving equilibrium" as the basic process in the development of nature and society. All components of a society are engaged in a constant search for an equilibrium in their interaction and their relations to the total natural and social environment. In capitalist society, Bogdanov argued, the equilibration of interacting—and contending—social forces is achieved with the help of "external norms," that is, the norms generated and enforced by the state, rather than with the help of "internal norms," that is, the norms generated by society itself and applied without the resort to institutionalized coercion.⁶⁷ The future society, the society unencumbered by "external norms," will come about as a result of the gradual but inexorable growth of technology rather than by revolutionary political action. Technology alone can create the prerequisite conditions for the growth of social cooperation and for a full elimination of social-class conflict.

The aim of the scientific study of society, according to Bogdanov, is to rise above the "subjectivism" of class ideologies and to establish "objective truths"—"to express the life experience of all mankind" rather than of

particular groups.⁶⁸ Only by dedication to universal truths can scientists hope to be in a position to undertake an objective analysis of ideologically colored views of various classes and groups. The history of social science is the history of improvements in the rigor of the scientific method. And the history of the scientific method is the gradual progress in logical procedures for distilling “typical,” “repetitive,” and “noncontradictory” elements from the mass of human experience. In general, in its task to disentangle the previously hidden mysteries of nature and society, science must wage a continual war on class bias.

TEKTOLOGY: THE GENERAL SCIENCE OF ORGANIZATION

Just as Bogdanov’s elaboration of empiriomonism was a direct continuation of his previous studies in the “historical view of nature” and in the philosophy and sociology of knowledge, so his work on a new science, labeled tektology, was the offshoot of empiriomonism. Despite a basic continuity in the evolution of his thought, it should be stressed that, while empiriomonism is concerned mainly with the philosophical foundations of a general theory of society, tektology is presented as a “general natural science.” Bogdanov borrowed the term “tektology” from Ernst Haeckel, who used it to designate a branch of morphology dealing with the organism as a complex system of morphons of various orders. In Bogdanov’s usage, tektology is a science dealing with processes which regulate the organization of all systems of natural and social phenomena. He contended that all the universal aspects of both society and nature can be revealed by studying the laws of organization. He noted that individual sciences deal with the particular aspects of the universal theory of organization: mathematics, for example, studies “all kinds of complexes in a state of equilibrium.” Bogdanov proposed to develop a comprehensive science that would synthesize the knowledge accumulated by specialized disciplines. Tektology, he said, “combines the abstract symbolism of mathematics with the experimental character of the natural sciences.”⁶⁹ It is universal because it embraces the entire world of experience; yet it is primarily a sociohistorical science, for human society is the central problem of its inquiry.

Tektology is fully congruent with Bogdanov’s philosophic orientation. It is empirical inasmuch as it considers experience the only source of scientific knowledge; and it is monistic inasmuch as it assumes the operation of the same structural principles at every level of reality. (Dialectical materialism, according to Bogdanov, is a “nonmonistic” theory, for it claims that nature and society are qualitatively different realities governed by different sets of laws.)⁷⁰ Tektology assumes that the organization of human experience reflects the organization of the universe—that human thought is as tektological as the rest of nature.⁷¹

Bogdanov conceptualized a world in which conflict is overshadowed by a general harmony, or complementarity, of universal processes, and in which all change is essentially gradual. He viewed conflict as an indispensable step in the growth of cooperation. Social harmony, he said, is a reconciliation, rather than the nonexistence, of social contradictions. Cooperation, not less than freedom and equality, is a cultural value that can emerge only in societies which have experienced suppression and inequality.⁷² In the same vein, he viewed "disorganization" as a special form of organization. Both organization and disorganization follow the same pattern; the only difference is that organization is larger than the sum total of its individual components, whereas "disorganization is smaller."⁷³

As conceived tektologically, the organizational approach is both structural and dynamic. It is structural, for it relies on a holistic view of natural and social systems; it considers a natural or social system irreducible to its component parts. According to Bogdanov, the more a system differs from the sum total of its component parts, the higher is the level of its organization. The organizational approach is dynamic inasmuch as it is concerned with continuous changes of an adaptive and selective nature. Tektology studies not only the differentiation and convergence of existing forms but also the forces contributing to the maintenance of intra- and intersystem equilibria. Bogdanov stresses "moving equilibrium" as an area of inquiry in which the structural and dynamic aspects of organization are only two different sides of the same reality. His mechanism of organization is dominated by "motion" and equilibrium; while orthodox Marxists treat equilibrium as a specific state of motion, Bogdanov views motion as a specific expression of equilibrium.

Organization, as a universal attribute of nature and society, operates through regulative and formative mechanisms. The regulative mechanism accounts for the maintenance or the preservation of the stability of such systems as a society, a social class, an organism, or a planet. It also helps maintain the continuity of natural and social development, which eliminates cataclysmic changes. Selection, the most universal tool of the regulative mechanism, is subject to growing specialization in both nature and society. One of the basic tasks of tektology is to reduce the multitude of selective processes to a small number of fundamental categories. In the scheme of selection there are three components: the object of selection, the act of selection, and the criteria of selection. Nature is the primary object of selection, social labor is the primary act of selection, and the usefulness of objects which surround man is the basic criterion of selection. Selection is "conservative" when it produces "static results," which contribute to the maintenance of a "stable equilibrium"; it is "progressive" when it produces "dynamic results," which evoke changes in the existing—or bring forth new—organizational forces. It is "positive" when it leads to a larger

heterogeneity of elements and an increased complexity of internal relations; it is "negative" when it leads to growing homogeneity of elements and reduced complexity of ties between them.⁷⁴

The formative mechanism explains the emergence and development of the most general forms of organization. The term "conjugation" denotes the most universal process of the integration of various principles into specific forms of organization. It is expressed in several basic types of bonds, which attracted much of Bogdanov's attention. Ingression stands for reversible bonds: the relations between A and B are indistinguishable from the relations between B and A. Ingression is illustrated by two rings in an iron chain, two identical crystals, or two soldiers of the same rank. It is the basic law of continuity in the universe. Egression designates the dominant type of irreversible bonds. The "centralized" systems are the best examples of egression; their essential characteristic is the absence of the bonds of equivalence between constituent parts. The sun and the earth belong to the same natural system—and the monarch and his subjects to the same social system—but they have no bonds of equivalence and are not functionally reversible. Egression plays a particularly important role in the living world. Most multicellular organisms are centralized systems: in each organism the brain is the organizational center for all other organs. The neural communication is irreversible, inasmuch as the neural tissues which transmit impulses from the brain to other parts of the body are completely separate from the neural tissues which transmit excitations to the brain.⁷⁵ Many social groups among men and animals are organized along the principles of egression. In human society, egression finds its best and most common expression in authoritative organizations typified by the family, bureaucracy, despotic monarchy, and the army. However, egression is more limited than ingression because it designates systems with finite numbers of complexes. While ingression chains may have infinite numbers of components, egression chains are bound by a central system at the top and a limited number of components at the bottom.⁷⁶

Degression, the third basic process of universal integration of natural and social phenomena, is the opposite of egression. In egression the central, or organizing part (the brain, for example) is the most complex component of the given system; in degression, the central part is the least complex component of the given system. The skeleton of an organism provides the best example of degression; it is made of organic and inorganic matter of a relatively low complexity, but without it the brain would be unable to achieve a high level of complexity.⁷⁷ Words occupy the central position in the system of human communication; yet they are much simpler than the complex psychological processes to which they give external expression. While dominated by opposite organizational principles, degression and egression may be functionally complementary. The typical example for this comple-

mentarity is the organism in which the brain is the egressive center while the skeleton is the degressive center.⁷⁸

Degression generally designates a conservative network of bonds in natural and social systems; it emanates from the most stable components of systems which resist change. In comparison with other systems, degressive systems are characterized by rigidity of organization. They are most typically expressed in formal organizations which may last for centuries even though they may cease to meet all functional requirements. Inasmuch as it is concerned with the transmission and preservation of values as components of sacred culture, education is essentially a degressive process. The major function of degressive processes is to preserve the equilibrium in natural and social systems—to avert revolutionary leaps. Although relative stability is their characteristic, degressive systems undergo change, primarily as a result of adaptation to complex systems.

Bogdanov contended that the ultimate intent of tektology is not merely to describe the overall structure of the social world but to produce reliable information for reshaping it. However, his immediate aim was purely theoretical: the construction of models expressing “the forms of our thought about organization combinations” and revealing the basic structural principles of universal organization.⁷⁹ Bogdanov’s organization theory marked a radical departure from Marxist philosophy: while in Marxist thought “dialectics” is a universal law of change in nature and society, in Bogdanov’s tektological view it is only a small component of a more universal organizational process.⁸⁰ In the opinion of a Marxist critic, the tektological theory offered a revision of “all the fundamental concepts of Marxism-Leninism.”⁸¹ In one respect, however, Bogdanov remained true to the Marxist tradition: he made the theory of universal organization a specific expression of his belief in science as the only cultural force that can guide mankind to previously unscaled heights of social progress. However, he reasoned that social progress can be assured not by present-day science, fragmented into hundreds of specialized branches, but by a new general science, “combining the entire organizational experience of mankind.”⁸² In the past, philosophy had a monopoly on the idea of the unity of society, as a special manifestation of the unity of the universe. Since the philosophical idea of unity is too abstract and too deeply steeped in fetishism, it must be replaced by a scientific theory based on a comprehensive study of “the methods and forms of organization.”

Bogdanov’s tektology shows elementary similarities with cybernetics. The concept of feedback, essential to all cybernetic systems, finds a place in Bogdanov’s intricate tektological system under the name of “biregulator.” Like cyberneticists, he built the tektological system on the formal similarities between neurophysiological systems, the structure of language, mathematical symbolism, and formal sociology. His theory of moving equilibrium

shows much similarity with Ludwig Von Bertalanffy's theory of "open systems": both extend the Le Chatelier principle to all dynamic systems. According to a modern commentator, tektology, as a general theory, covers not only cybernetic principles, that is, the principles of information systems, but also the "hierarchical orders" in the relations between systems and the principles depicting the origin and disintegration of systems.⁸³

Bogdanov may be counted among the pioneers of the general systems theory. He claimed that a discipline concerned with systems must be a special kind of science, drawing its substance from several established branches of mathematics and the natural sciences. His real contribution lay in pointing out the necessity and the feasibility of such a science, rather than in developing a system of useful scientific propositions. His tektological formulations are often vague, even in the construction of basic concepts, and the entire system lacks symmetry and logical precision. However, his ideas are bold, and his search for sociologically fruitful research models is a well-planned step in the right direction. He was one of the first Russian social theorists to undertake a detailed study of the epistemological domain where the social and natural sciences meet and where mathematical symbolism can be applied profitably to the scientific study of social behavior.⁸⁴ He was the most original Russian social thinker engaged in the study of processes which subordinate human society to the universal laws of nature. Unfortunately, Bogdanov made no effort to apply his grand design to the study of actual social existence, and left it completely untested. He was among the pioneers of the modern search for a grand theory of sociology who, preoccupied with the universal aspects of the human condition, operated far above the vagaries of everyday existence, and whose theoretical constructions were irreducible to designs for empirical research. He tried to make sociology a physics of social action at the time when classical physics, staggered by an ongoing revolution of profound philosophical significance, was too unsettled to serve as a model for other sciences. His sociology incorporates an idealistic view of knowledge and a mechanistic view of nature and society.

Although he was ignored by the wide spectrum of idealistic philosophers and bitterly condemned by orthodox Marxists, including both Plekhanov and Lenin, Bogdanov was one of the most original, productive, and accomplished Russian social philosophers of his generation. Few Russian sociologists matched the depth of his analysis, the scope of his interests, and the courage of his pioneering zeal.

21. Kovalevskii, "Kondorse," no. 3, pp. 140-44; idem, no. 4, pp. 494-507.
22. Kovalevskii, *Sotsiologiia*, 1:6.
23. Ibid., p. 30.
24. Rubakin, *Sredi knig*, 2:903.
25. Kovalevskii, *Sotsiologiia*, 1:115.
26. Ibid., pp. 115, 262. See also Kovalevskii, *Sovremennye sotsiologi*, pp. 53-54 and "Psychologie et sociologie."
27. Kovalevskii, *Sotsiologiia*, 1:197.
28. Kazakov, *Teoriia progressa*, pp. 121-22.
29. Sorokin, "Teoriia faktorov," pp. 180-95. See also Kondrat'ev, "Rost' naseleniia," pp. 211-17.
30. Kovalevskii, *Sotsiologiia*, 1:264-300.
31. Ibid., p. 286.
32. Ward, *Dynamic Sociology*, I:xvii.
33. Kovalevskii, "Sovremennye frantsuzskie sotsiologi," pp. 351-52.
34. Kovalevskii, "Progress," p. 258 and "N. K. Mikhailovskii," pp. 206-7.
35. Kovalevskii, *Sotsiologiia*, 2:30.
36. Kazakov, *Teoriia progressa*, p. 107.
37. Kareev, "M. M. Kovalevskii," p. 178.
38. Safronov, *M. M. Kovalevskii*, p. 22.
39. Tugan-Baranovskii, "M. M. Kovalevskii," p. 51.
40. Kovalevskii, "N. K. Mikhailovskii," p. 210.
41. Kovalevskii, "Sotsiologiia i sravnitel'naia istoriia," p. 13.
42. K. Sokolov, "M. M. Kovalevskii," p. 240.
43. Struve, "M. M. Kovalevskii," pp. 98-100.
44. Miliukov, "M. M. Kovalevskii," p. 139.
45. Kovalevskii, "Dve zhizni," no. 7, p. 22.

Chapter 7

1. Resis, "Das Kapital," p. 226.
2. Filippov, "Sovremennye russkie ekonomisti," pp. 1541-42. For details on various Russian translations of *Capital*, see Tikhomirov, "Iz istorii," pp. 7-43. For details on the first translation of *Capital* into Russian and its reception, see Resis, "Das Kapital." According to Resis, when the Russian translation of *Capital* appeared in 1872, the belief of its publishers that it would be much in demand proved correct. "Three points were frequently made in reviews. Most of the reviewers found Marx's description of the horrors of capitalism inflicted on the proletariat in the West of the greatest interest. . . . A second group, mostly academics, concerned themselves with Marx's method. A third group, however, manifested a new interest, a concern with Marx's 'laws' and stages of economic development as they applied to Russia" (Resis, "Das Kapital," p. 228). See also Sh. M. Levin, *Obshchestvennoe dvizhenie*, pp. 338-48.
3. Marx, *Capital*, p. 21; K. Marks, *F. Engels i revoliutsionnaia Rossiia*, p. 42.
4. For interesting comments, see Mikhailovskii, "Literatura i zhizn'," no. 1, 1895, pp. 140-41.
5. For more details on Ziber's research interests and contributions, see Reuel', *Russkaia ekonomicheskaiia mysl'*, chap. 6.
6. P. B. Struve noted that the Russian academic community—as represented by political economists—turned against the "abstract method" in political economy and "economic liberalism" built upon Adam Smith's theoretical legacy under the direct influence not of Marx but of German "academic socialists" (Struve, *Istoricheskoe vvedenie*, pp. 5-6). For interesting comments, see Wortman, *The Crisis*, pp. 146-47.
7. Martov, "Obshchestvennyie i umstvennyie techeniia," p. 49.
8. Baron, "Plekhanov," pp. 59-60.

9. Kondrat'ev, *Mikhail Ivanovich Tugan-Baranovskii*, p. 35. For a detailed analysis of the economic, social, and political background of Russian Marxism during the 1890s, see Keep, *The Rise*, chap. 2.

10. For additional details, see Baron, "The First Decade," pp. 323–30.

11. Kareev, *Istoriko-filosofskie i sotsiologicheskie etyudy*, p. 236.

12. Vinogradoff, *Villainage*, pp. vi–vii.

13. Nine years earlier, I. V. Luchitskii, the well-known Russian expert on French economic history, stated that economic history is the only history that has scientific foundations and that its future was not merely in tracing the main lines of economic growth but in analyzing the relations of economy to all major categories of institutions. Kareev, *Istoriko-filosofskie i sotsiologicheskie etyudy*, pp. 178–79.

14. Tugan-Baranovskii, *Promyshlennye krizisy*, p. i.

15. Kindersley, *The First Russian Revisionists*, p. 58. Tugan-Baranovskii's influence on Western economic theory is discussed in Moisseev, "L'évolution d'une doctrine." See also Kondrat'ev, *Mikhail Ivanovich Tugan-Baranovskii*, pp. 81–82; Tschebotareff, *Untersuchungen*, pp. 39–54; and Timoshenko, "M. I. Tugan-Baranovskii," pp. 813–22.

16. Plekhanov, "O sotsial'noi demokratii," p. 275.

17. Liadov, *Istoriia*, pp. 145–46.

18. Mikhailovskii, "Literatura i zhizn'," no. 1 (1894), pp. 105–6. See also Plekhanov, *Izbrannye filosofskie proizvedeniia*, 1:677.

19. Kareev, *Istoriko-filosofskie i sotsiologicheskie etyudy*, pp. 191–92.

20. Tugan-Baranovskii, *Statisticheskie itogi*, pp. 40–41.

21. Tugan-Baranovskii, *Russkaia fabrika*, p. iv.

22. Struve, *Kriticheskie zametki*, p. 35.

23. Kindersley, *The First Russian Revisionists*, p. 56. In a later study, Tugan-Baranovskii claimed that "without Proudhon's *Système des contradictions économique ou Philosophie de la misère* (1846) Marx would have found it impossible to write *Capital*. Both the general plan and many specific features of Proudhon's *Système* exercised a powerful influence on the author of *Capital*, who attributed no value to the work to which he was so much indebted" (Tugan-Baranovskii, "Ocherki," no. 2 [1902]: 84, 90).

24. Bulgakov, "O zakonomernosti," p. 611. For additional comments, see A. P. Mendel, *Dilemmas*, pp. 133–34.

25. Lenin, *Polnoe sobranie sochinenii*, 1:429.

26. Plekhanov, *Fundamental Problems of Marxism*, pp. 80–81.

27. Lenin, *Polnoe sobranie sochinenii*, 1:137.

28. Plekhanov, *Izbrannye filosofskie proizvedeniia*, 2:483–84. See also Krivtsov, "Plekhanov kak sotsiolog," p. 51.

29. Aref'eva and Lysmankin, "Razvitie," p. 278.

30. Lenin, *Polnoe sobranie sochinenii*, 1:138.

31. *Ibid.*, 1:167, 429.

32. *Ibid.*, p. 166.

33. Marx, *Capital*, p. 15.

34. Lenin, *Polnoe sobranie sochinenii*, 1:166.

35. Marx and Engels, *The Economic and Philosophic Manuscripts*, p. 143.

36. Marx and Engels, *Selected Works*, p. 183.

37. Aksel'rod (Ortodoks), *O 'Problemakh idealizma'*, pp. 41–42. The scientific nature of Marx's political economy was analyzed in Filippov, "Sotsiologicheskoe uchenie," no. 2, pp. 41–44. Filippov likened Marx's study of English capitalism to the work of a chemist who studied a substance in its pure (or classic) form. Marx, he thought, combined Ricardo's "geometric precision" with Adam Smith's catholicity of interests.

38. Rumiantsev, Osipov, and Burlatskii, "Lenin," p. 268.

39. Lenin, *Polnoe sobranie sochinenii*, 1:139.
40. Plekhanov, *Izbrannye filosofskie proizvedeniia*, 1:690-91.
41. Plekhanov, *Unaddressed Letters*, p. 19.
42. *Ibid.*, pp. 18-19.
43. Plekhanov, *Fundamental Problems of Marxism*, pp. 46-47.
44. Deborin, *Filosofiia i politika*, p. 65.
45. *Ibid.*, pp. 65-66.
46. Marx and Engels, *Selected Works in Three Volumes*, 3:201.
47. Marx and Engels, *Selected Correspondence*, p. 518.
48. Marx and Engels, *Selected Works in Three Volumes*, 3:191.
49. Plekhanov, *Izbrannye filosofskie proizvedeniia*, 1:686.
50. Plekhanov, *Fundamental Problems of Marxism*, pp. 63-64.
51. Lenin, *Polnoe sobranie sochinenii*, 1:149.
52. *Ibid.*, p. 146.
53. Plekhanov, *Sochineniia*, 8:299. See also Tugan-Baranovskii, "Znachenie ekonomicheskogo faktora," p. 111.
54. Daniel'son [Nikolai-on], "Apologiia," no. 2, pp. 23, 34.
55. Vorontsov [V. V.], *Sud'by kapitalizma*, p. 5.
56. Baron, "Legal Marxism," p. 123.
57. Struve, *Kriticheskie zametki*, 1:288.
58. Marx and Engels, *Selected Works in Three Volumes*, 3:157. For a detailed Marxist critique of the economic premises of the Populist theory of *obshchina* as a model rural community, see Plekhanov [A. Volgin], *Obosnovanie narodnichestva*, pp. 82-175, idem, *Nashi raznoglasiia*, chap. 3, and Laptin, *Obshchina*, pp. 100-118.
59. Struve, *Kriticheskie zametki*, pp. 63-64.
60. Plekhanov, *Sochineniia*, 7:211.
61. *Ibid.*
62. Dan, *The Origins*, p. 174.
63. Lenin, *Polnoe sobranie sochinenii*, 4:184.
64. *Ibid.*, 20:128.
65. For Tugan-Baranovskii's views on Populist economic theory see his *Russkaia fabrika*, pp. 542-60.
66. Struve, *Na raznye temy*, pp. 462-64. See also Filippov, "Sub'ektivizm." For a critical survey of Marxist views on the "capitalist" transformation of Russian agriculture, see Martynov, "Glavneishie momenty," pp. 307-13. The substantive and theoretical richness of *Russkaia fabrika* had led V. P. Timoshenko to assert that Tugan-Baranovskii's work was "in close relation to the theoretical and historical work in Western Europe" and that Tugan-Baranovskii not only gave a masterful analysis of the evolution of Russian economy but also contributed to "the creation of a theory of capitalist development, both in Russia and in general" (Timoshenko, "M. I. Tugan-Baranovsky," pp. 814-15).
67. Mikhailovskii, "Literatura i zhizn'," no. 1 (1895): 151. For a survey of the anti-Marxist campaign of Mikhailovskii and other *Russian Wealth* writers, see Kareev, *Starye i novye etudy*, pp. 230-67.
68. Mikhailovskii, "Literatura i zhizn'," no. 1 (1896): 40-66; Gorev, *N. K. Mikhailovskii*, p. 66; Khoros, *Narodnicheskaiia ideologiia*, pp. 121-22. According to Lunkevich: "While having recognized the gigantic role of the economic factor, Mikhailovskii refused to treat it as an exclusive and universal force behind historical events" (Lunkevich, *N. K. Mikhailovskii*, p. 84). If anything, Kareev argued, the Populist critics were inclined to exaggerate the importance of the economic factor in history (Kareev, *Starye i novye etudy*, p. 267).
69. Lenin, *Polnoe sobranie sochinenii*, 1:165.
70. Polianskii, *Plekhanov*, p. 71.

71. Kazakov, *Teoriia progressa*, p. 63. See also Khoros, “V. I. Lenin”; Sh. M. Levin, “V. I. Lenin i problema revoliutsionnogo narodnichestva,” pp. 139–230; Sh. M. Levin, “V. I. Lenin i russkaia obshchestvenno-politicheskaia mysl’,” pp. 286–306.
72. Struve, *Na raznye temy*, pp. 499–500.
73. *Ibid.*, p. 504.
74. Struve, “Die Marxsche Theorie,” p. 680. See also Potresov, “Evolutsiia,” pp. 588–89. The metamorphosis of Marxian social theory in the 1890s is described in Struve, “Na raznye temy,” *Mir bozhii*, no. 6 (1901): 17–20; Martynov, “Glavneishie momenty,” pp. 318–20.
75. Struve, “Predislovie,” p. vi.
76. *Ibid.*, p. vii.
77. *Ibid.*, p. xxiii.
78. Struve, *Na raznye temy*, p. 520.
79. Struve, “Predislovie,” pp. liii–liv.
80. Struve, “Intelligentsiia i revoliutsiia,” pp. 169–74.
81. Miloradovich, Review of *Vekhi*, p. 432.
82. For Struve’s defense of his new orientation, see his “Na raznye temy,” *Russkaia mysl’*, no. 5 (1909): 123. He was particularly critical of D. I. Shakhovskoi’s claim that his “social reaction” was more portentous than “government reaction.”
83. Struve, “Na raznye temy,” *Russkaia mysl’*, no. 1 (1909): 209–10; and *idem*, “Religiia i sotsializm,” p. 159.
84. Struve, “Na raznye temy,” *Russkaia mysl’*, no. 12 (1909): 191.
85. Struve, *Khoziaistvo i tsena*, 1:39.
86. Struve, “Otryki,” pp. 192–93.
87. Struve, “Khoziaistvo i tsena,” pp. 134–35.
88. Struve, *Khoziaistvo i tsena*, 1:60–61. See also Struve, “Sovremennii krizis,” pp. 138–42.
89. For a critical appraisal, see Ratner, “Uchenyi podkhod,” pp. 60–61.
90. Struve, *Khoziaistvo i tsena*, 1:7. For a critical review, see Tugan-Baranovskii, “Novyi trud,” pp. 374–76.
91. Tugan-Baranovskii, “Ocherki,” no. 9 (1902): 134.
92. Kindersley, *The First Russian Revisionists*, p. 163.
93. Tugan-Baranovskii, “Osnovnaia oshibka,” p. 974.
94. Tugan-Baranovskii, “Ocherki,” no. 7 (1902): 162.
95. Tugan-Baranovskii, *Modern Socialism*, p. 9.
96. Tugan-Baranovskii, “Ocherki,” no. 10 (1902): 302.
97. Tugan-Baranovskii, *Modern Socialism*, pp. 11–14.
98. Tugan-Baranovskii, “Subjektivismus,” p. 564.
99. Tugan-Baranovskii, “Predislovie,” pp. iv–viii. See also L. Slonimskii, “Spory,” pp. 734–36.
100. Tugan-Baranovskii, “Kant und Marx,” pp. 187–88.
101. Tugan-Baranovskii, “Chto takoe obshchestvennyi klass?” pp. 64–72.
102. Tugan-Baranovskii, “Bor’ba klassov,” p. 243.
103. Tugan-Baranovskii offered detailed criticisms of Marxian sociology in “Bor’ba klassov,” “Chto takoe obshchestvennyi klass?” and “Intelligentsiia i sotsializm.” See also Vorländer, *Kant und Marx*, pp. 200–206; and Bernstein, “Tugan-Baranowsky als Sozialist.”
104. Tugan-Baranovskii, “Bor’ba klassov,” p. 249.
105. *Ibid.*, p. 252.
106. Tugan-Baranovskii, *Obshchestvenno-ekonomicheskie idealy*, p. 4.
107. Tugan-Baranovskii, *Sotsial’nye osnovy kooperatsii*, chap. 1.
108. Tugan-Baranovskii, *Modern Socialism*, pp. 180–81.

Chapter 8

1. For biographical data on Bogdanov, see Grille, *Lenins Rivale*, pp. 39–72; Shcheglov, *Bor’ba*