Science and Morality: A Soviet Dilemma

Leading Soviet scientists search for a broader cultural autonomy of science.

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The problem of the relationship of science to morality was widely discussed in Russia during the last decades of the tsarist system. Kliment Timiriazev, the eminent plant physiologist, upheld the Nihilist view that science is the primary source of modern morality and the most reliable indicator of cultural progress. He fully endorsed M. Berthelot's assertion that, since the 17th century, science has been the only contributor to "the improvement of the material and moral conditions of social life" (*1*). He identified Darwinian evolution with cultural progress, cultural progress with the growing power of science, and science with the triumphs of the moral code.

The second view, by far the most popular in the Russian scientific community at the beginning of the century, expressed serious doubts about both the science of ethics and scientifically determined morality. Vladimir Vernadskii, the famous biogeologist, was the most eloquent spokesman of this group. According to him, every effort to reduce morality to science was the intellectual product of a one-sided interpretation of the place of science in modern culture. One cannot appreciate the power of science, according to him, until he understands and acknowledges its intrinsic limitations and its complementary relations with moral, religious, philosophical, technical, and esthetic modes of inquiry. Vernadskii recognized the great contributions of Nihilism to the development of rationalist thought and science in modern Russia; but he carefully emphasized that most scientists, influenced by the writings of the Nihilists of the 1860's, gradually abandoned Nihilist scientism and "materialism" and learned to live with a more modest view of science (*2*).

The views of the Nihilists and Timiriazev, anchored in a philosophy of the limitless intellectual and social power of science, have become an organic part of Soviet ideology. Vernadskii's democratic notion of the equality of science with other modes of inquiry has given way to Timiriazev's aristocratic concept which placed science on the Olympus and made it the chief architect of cultural progress. Moral law has become a by-product of science; science, in official Soviet ideology, is a structural component of Soviet society, while the moral code is only a superstructural derivation. Soviet society, according to Soviet ideology, is the first political community in which science is a crucial component of the social *base* and the first society in which morality is fully congruent with the laws of science. "Moral truths," according to a typical Soviet writer, ". . . are in no essential way different from scientific truths, as was claimed by Kant and modern positivists . . . . The concept of moral truth corresponds to the concept of truth in general and is a particular case of the latter" (*3*).

Morality is viewed not only as a product of science but also as a subject of scientific inquiry. In a publication entitled the *Foundations of Marxist-Leninist Philosophy* we read: "Moral norms are principles with a scientific foundation. The false or true nature of moral norms can be ascertained by means of a scientific analysis" (*4*).

The subordination of morality to science in the Soviet Union has been a part of a broader process of subordinating all modes of inquiry to the tutelage of science and of eliminating those that are considered to be in open conflict with science. Philosophy has been proclaimed a study of the general principles of scientific inquiry and every branch of philosophical thought in open conflict with science has been outlawed. Religion has been chastised as a negation of science. The works of art have been identified as special cultural expressions of an "undivided world view" rooted in science and contributing to a "cognition and reproduction of reality." A poet is not asked to be a scientist but he is expected not to challenge the scientific world view, as the world view of Soviet culture.

Stalin's "Ethos of Science"

The boundaries of Soviet ideology, according to the official view, stay completely within the orbit of science. The identification of ideology and science has been advanced by ideologists, not by scientists, and has been the main stumbling block in the growth of Soviet science. It was this partnership that made it easy for Stalin to take it upon himself to define the ethos of Soviet science. He formulated four major moral obligations of Soviet scientists.

The first obligation, covered by the infamous term "anti-cosmopolitanism," demanded that scientists extol the national originality and cultural independence of Russian science. It attacked one of the guiding ethical norms of science —the recognition of universalism in the accumulation of scientific wisdom. It denied the existence of an international community of scientists.

The second obligation called for a relentless war on objectivism. The scholar was ordered, on ethical grounds, to ignore the truth that cast unfavorable light on the Soviet system. There was no room for sociology as a study of the complex problems of Soviet social reality. An important function of the social scientist was to *explain away* the acute social problems by reliance on ideology, rather than to *explain* them by reliance on the objective methods of science.

The third obligation of the scientists was to take an active part in a war on alien ideologies abroad and ideological impurities at home. The duty of every scientist was to condemn the philosophies of great scientists which were incompatible with dialectical materialism. Stalin's relentless campaign in behalf of the ideological purification of Soviet science is well known in the Soviet Union and abroad. *The Evolution of*

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Physics, the stimulating and delightful book written by Einstein and Infeld, could not be published in the Soviet Union in the early 1950's because it stated that all ideas are free products of the human mind.

The fourth obligation had its source in the Stalinist idea of the technological functions of science. The scientist was pressured into contributing to the solution of imminent economic problems and, consequently, into avoiding pure theory, removed from the contingencies of the day. The value of research projects was determined not by the world of scholarship but by the *Gosplan*.

The Stalinist "ethos" of science interfered with the inalienable right of the scientist to define the limits of scientific investigation, to enter into a more creative reciprocal relationship with representatives of the nonscientific modes of inquiry, to be the sole custodian of the moral rules which guide him and his colleagues in their professional work, to play a decisive role in determining the lines of scientific development, and to maintain working relations with the international community of scientists. The Stalinist "science" of ethics was the prime enemy of the ethics of science.

Today much of the Stalinist "ethos" of science is history. The idea of the international nature of science has become a rule in the assessment of the growth of scientific thought. As anti-objectivism crumbled, sociology has been recognized as a legitimate science and may well inaugurate an era of scientific studies of the social problems engendered by the Soviet system. The struggle for the ideological purity of science has quietly subsided beyond recognition. Ideology is still equated with the established facts of science—but ideological interference with scientific work has been drastically reduced. Scientists have generally won their struggle against the technological orientation of the Academy of Sciences, although many problems still remain to be resolved in favor of the best interests of science.

All this should not lead to a conclusion that Soviet science has won a full victory over the degrading and crippling effects of Stalinist policies. Stimulated by considerable relaxation of political and ideological controls, the men of scientific knowledge are presently engaged in a quiet and subtle quest for more favorable conditions for the growth of science, as a system of knowledge, an institutional complex and a world view. The reassessment of the ethical foundations of Soviet science is the motive force of this quest.

In preparation for the celebration of the 50th anniversary of the October Revolution, Soviet scholars have published summaries and professional appraisals of the major scientific achievements of their country. The staff of the Academy of Sciences alone has prepared for publication nine massive volumes under the general title "Fifty Years of Soviet Science and Technology." The scientists can rightfully point out the Soviet triumphs in many areas of the physical and mathematical sciences and can boast of a gigantic institutional network dedicated to the advancement of scientific knowledge. In the 19th century most leading Russian scientists wrote in French and German in search of a wider public that would read and appreciate their work. Today the Russian language is the second language of world science. Over 100 Soviet scientific journals are now translated into English cover-to-cover.

In addition to appreciating the progress made by their country in many areas of scientific scholarship, individual scientists—usually the leading academicians with international reputations—are now also asking questions of another order: they want to understand the working of the forces which have stood in the way of greater scientific achievement. With Petr Kapitsa, for example, they want to know why Soviet productivity in science is appreciably smaller than in the United States (*5*). Or, again with Kapitsa as their spokesman, they want to find out why the Soviet Union does not have a true community of scientists, with its own *esprit de corps*, ethical code, and protective institutional mechanisms—all indispensable for a continuous growth of science (*6*).

Brecht's Galileo

The relationship of science to morality and the culture of science in general have now come in for a broad reappraisal initiated by thoughtful scholars opposed to the moral and intellectual claims of official scientism. The gradually unfolding reappraisal has received particularly strong impetus from the performance of Brecht's drama *Galileo* in a Moscow theater in recent years. Brecht did not adhere too closely to the documented history of the salient moments in the life story of his hero. Nor did he treat all the critical issues related to Galileo's struggle with the cultural forces inimical to the development of modern science. In a highly fictionalized account he concentrated on one problem: Galileo's confrontation with the moral obligations of a scientist to science and society. Ridden with guilt for "postponing" the beginning of the age of reason by his convenient "retreat" from the heliocentric theory, Brecht's Galileo was more than vindicated by his clear understanding and enunciation of the moral foundations of science and of the nature of his "crime." He showed clearly that the ties between science and the ethical code are not explicable in deterministic terms. His involved and rather diffuse argument indicated that the idea that rationalism, distilled from a scientific analysis of underlying conditions, ensures a moral programing of behavior is too simple, sterile, and even dangerous. He showed even more eloquently that science has its own moral code which is much narrower than the code of total society and in many respects quite unique. Doubting and challenging every authority are, according to him, the unique imperatives of scientific work.

Brecht's Galileo "sinned" not in disavowing his discoveries upholding the heliocentric system but in violating the ethical principles of the scientific profession. When the Inquisitor asked him "Can society stand on doubt and not on faith?" he did not answer that science "trades in knowledge which is the product of doubt." He transgressed the moral code of science because he "surrendered" his knowledge to the powers outside of science to use it—or, rather, abuse it—as it suited their ends.

Brecht's Galileo gave a brief discourse on the ethos of science. He emphasized skepticism and free challenge as golden rules of scientific work. He made it clear that science cannot grow unless scientists have the supreme authority in selecting the topics of research and unless the scientific contributions of a scientist are judged only by his peers. Above everything else, he noted that the members of the scientific community must have the moral qualities to fight for the integrity of science and guard against the disruptive interference of forces external to science.

An interpreter of Brecht's *Galileo* reminded the readers of *Voprosy Filosofii* of the following statement written by Einstein in memory of Marie Curie:

"It is the moral qualities of its leading

personalities that are perhaps of even greater significance for a generation and for the course of history than purely intellectual accomplishments. Even these latter are, to a greater degree than is commonly credited, dependent on the stature of character" (*7*).

Current Debate and Reassessments

The current search of Soviet scientists for a reassessment of the relationship of science to morality and for a deeper understanding of the moral foundations of science is part of a growing quest for a firm separation of science from ideology. Scientists operate on the safe assumption that the identification of science and the officially defined moral code of Soviet society has opened the gates for the ideological control of science—for the subordination of the welfare of science to the interests of ideology. While textbook writers and orthodox philosophers of Soviet ideology still cling to the dictum that "moral truths" are essentially "scientific truths," A. N. Nesmeianov, the former President of the Academy of Sciences, states in *Literaturnaia Gazeta* that "I do not see any connection between science and morality . . . . Morality varies not only from society to society but also from individual to individual. An honest merchant in bourgeois society could be considered an exploiter and a speculator in our society, but science, say mathematics, physics and chemistry, is the same everywhere" (*8*).

Nesmeianov's statement has not gone unchallenged, but it is significant that the challenge has come exclusively from the defenders of ideological orthodoxy who cling tenaciously to the moral philosophy of science as evolved under the aegis of Stalinism. A. D. Aleksandrov could only repeat the old dictum that "the unity of science and morality, the unity of the scientific explanation of the world and the moral demand for its change is the alpha and omega of the Communist world view." Science, according to Aleksandrov, has an intellectual and a moral function: to understand the world and to change it. It is "indispensable for morality as light is for vision" (*9*).

P. S. Aleksandrov welcomed the hospitality of *Literaturnaia Gazeta* to back up Nesmeianov's statement. Like Nesmeianov, he too is interested in the interrelationship of science and morality as it has evolved in Western civilization rather than in Soviet ideology. According to him, science and morality are not only made of different cultural material but are also subject to different principles and tempos of development. Since the time of Rousseau, he said, science has marched at an accelerating speed and has become a major component of modern culture; during the same period, however, man has stuck to many grand delusions. He states: "The discovery of penicillin by Fleming coincided chronologically with the tragic events of World War II which created a need for its wide application. The synchrotron, lunar flights, and insulin have hardly improved on the world in which Euler and D'Alembert lived" (*10*). He made no effort to single out Soviet society as an exception to this sweeping and categorical assessment of the state of morality in the modern world.

Neither Nesmeianov nor Aleksandrov actually thinks that science and morality are totally unrelated. Although they have not elaborated their positions philosophically, it is clear that they share Henri Poincaré's view that science "studies everything" but always "from the same angle," and that although "there will never be scientific ethics in the strict sense of the word," science "can be an aid to ethics in an indirect manner" (*11*). A writer summed up the "new" view in *Voprosy Filosofii:*

". . . . the level of knowledge possessed by individual persons as well as by entire epochs does not correspond to the level of moral consciousness. . . . The differences in the 'tempo' of development of knowledge and moral consciousness are strongly felt and cannot be resolved by a simple exaggeration of the power of scientific knowledge" (*12*).

The technique of exaggeration used by Nesmeianov and Aleksandrov has paid handsome dividends: it has not only provoked a lively discussion of the scientific foundations of morality but has intensified the ongoing reexamination of the cultural matrix of science. It has spearheaded and systematized the current search for an affirmation of the inalienable right of scientists to define the domain, and the limits, of scientific inquiry and to safeguard science —not from ethics, esthetics, metaphysics, and religion—but from pseudoscience.

Current writings on the professional problems of scientific work show the determined search of Soviet scholars for a genuine community of scientists which would protect the moral and intellectual interests of science. Petr Kapitsa sums up the problem in the following statements:

"It is easy to see that the progress of science requires the existence of a fully developed scientific community.... The creation of a healthy and advanced community of scientists is an enormous task to which we give far too little attention. This task is more difficult than the training of selected young talent or the construction of large institutes. . . . The community of scientists alone can objectively judge the achievements of science. . . . Only an advanced scientific community can fully appraise the intellectual power of a scientific discovery independently of its direct practical significance" (*13*).

Science progresses through systematic and responsible challenges of all relevant authority. It does not advance through the worship of established knowledge but through constant intellectual doubt and search for proofs. Organized, responsible, and articulated skepticism is solidly built into the professional mentality of true scientists. It is the cornerstone of the ethos of science. Its violation has been the major cause of the uneven growth of Soviet science. While some sciences have kept pace with the most advanced ideas in their respective fields and have made substantial contributions to the most modern areas in research, others have lost the pioneering zeal and some have seriously retrograded. Until recently a major source of this unevenness was the officially enforced limitation on criticism of certain ideologically relevant scientific orientations or propositions—such as Marxist-Leninist historicism, Michurinian evolutionism, Lenin's caution against "mathematical idealism," and physical and physiological determinism.

Today, a concerted effort to ensure an even growth of scientific thought has received the highest priority in the world of Soviet scientific scholarship. The philosophy of dialectical materialism has retreated from many epistemological and ontological positions that have proven to be impediments to the normal growth of science. Dialectical materialism has been stretched so far that now it is viewed as essentially compatible with the philosophical views of Einstein and Bohr, which were considered degenerate idealistic delusions only 10 years ago. Soviet scientists have dis-

covered, however, that it is much easier to disturb the normal growth of science than to restore a healthy impetus to unimpeded development.

The work of a scientist should be judged by his peers acting as representatives of science. Until recently, Soviet science—as amply illustrated by the case of genetics—suffered from a serious institutional impediment: it harbored "peers" whose criticism did not evolve from an identification with science but with official ideology, and who acted as outsiders in the house of science. Today it is admitted that it was the disregard of the most elementary moral rules that caused the tragedy of Soviet genetics.

In its ultimate goals, science is utilitarian—its contributions are measured in terms of its share in the progress of human welfare. However, the scientist, and not the ideologist, should be granted the irrevocable right to assess and define the nature and the scope of the practical usefulness of science. Stalin had a pathological fear of "pure science" and endeavored to make the Soviet Academy of Sciences a technologically oriented institution. Since 1959 the government has yielded to the pressure of many leading scientists to "detechnologize" the Academy, but even today there are individual scholars who claim that much more has to be done to create the conditions conducive to a more even and versatile development of science. Today very few Soviet scientists would challenge the idea that the power of science as a source of social well-being is not measured by visible and imminent practicality but by the magnitude, richness, and abstraction of its theory, the main wheels of its progress. However, the question asked by L. A. Artsimovich, director of the powerful N. P. Lebedev Institute of Theoretical Physics, should the Academy, as the pace-setting Soviet scientific institution, serve as a source of expedient scientific-technical aid to various government projects or should it concentrate on basic research, is still waiting for an answer more favorable to the needs of science (*14*). In his speech commemorating the 100th anniversary of the birth of Ernest Rutherford, the famous British pioneer in nuclear physics, Kapitsa makes the bold and challenging statement that "science has lost freedom" because "it has become a productive force" (*15*). Another academician states: "We must be for utilitarianism —not primitive, but enlightened, utilitarianism—the utilitarianism of distant vision, which has not yet been recognized in our country."

Historical Materialism versus the "Inner Logic" of Science Growth

The current popularity of the so-called science of science is a philosophically articulated collective effort by Soviet scientists to codify their own views on the logical, ethical, psychological, organizational, and sociological problems of science, and to help Soviet science meet the modern problems of growing complexity and accelerated growth. Of particular relevance is the question: does historical materialism provide a sufficient explanation of the growth of science? Can the development of scientific thought in individual countries, and in general, be explained in terms of socioeconomic causation or determinism? A careful reading of the most recent literature shows that the intellectual monopoly of historical materialism is being challenged, at least in this particular area. Today there is a lively interest in the inner logic of the development of science—the growth of scientific thought determined by the internal logical mechanisms of science rather than by external conditions. External causation is not dismissed but its undivided reign has been subjected to serious challenge.

The argument in favor of the "inner logic" of scientific development has been clearly set forth by B. M. Kedrov, director of the Academy's Institute of the History of the Natural Sciences and Technology. The historian of science, according to Kedrov, must study the effects of "material conditions" on scientific work and the effects of science on "material conditions," but this is not enough: he must also study the internal logic of the growth of scientific thought which cannot be explained merely by an interaction of science and technology, or science and production, but requires an analysis of the entire process of knowledge, including the phases independent of the ties between science and production. Kedrov says that the materialistic interpretation can explain *why,* and under what conditions, science is faced with a specific problem, but not *how* it can solve it (*16*).

Modern history offers many examples showing that, in search for a solution to specific practical problems, science depends not on the urgency of external pressures but on the level of its internal development. Einstein's special theory of relativity is not so much an adaptation of science to the socioeconomic needs at the beginning of the 20th century as it is a grand and creative synthesis of certain unique intellectual strands in the development of modern science generated by the rise of the very impractical non-Euclidean geometries (particularly Riemann's), the Michelson-Morley experiments designed to establish the existence of ether, Lorentz's transformations, and the discovery of the physical and chemical nature of radiation. Kedrov states explicitly that historical materialism cannot explain why the theory of chemical structures and the periodic law of elements were discovered in Russia of the 1860's and not in scientifically and industrially more advanced Western countries. To understand why Butlerov "invented" structural chemistry and Mendeleev formulated the periodic law of elements it is necessary to lay bare the complicated mechanism of the inner logic of the growth of science which tolerates no deterministic explanations.

The emphasis currently placed on the inner logic of science growth is part of the general interest in the future expansion of science and in the organizational adaptability of its institutional maze. But it also has a profound sociological significance: together with the increasing defense of the moral code of science it has been part of a concerted search for the autonomy of science—for a genuine community of scholars.

The most important feature of the growing emphasis on the autonomy of science has been a quiet renouncement of the intellectual imperialism of scientism, a philosophy which seeks to establish a hegemony of science over all other modes of inquiry. Implicit in the burgeoning criticism is the notion that, in order to advance, science must not reign over, but must be tempered and enriched by, and legitimately harmonized with, the other sources of wisdom. Nesmeianov and his colleagues are convinced that there could be no meaningful cultural autonomy for science without the cultural autonomies of other modes of inquiry.

The very fact that a scientist may stand up in the defense of true science and its sustaining values is an index of the improved intellectual atmosphere in which he works and lives today. It should also be noted that a good deal

of criticism voiced by Kapitsa, Artsimovich, and their peers has a significance beyond Soviet reality. Scientists in all modern societies are confronted with the moral and intellectual challenge engendered by the momentous expansion, industrialization, and "collectivization" of science, its rapidly increasing penetration into every phase of social and personal life, and its growing dependence on outside subsidies and overseers.

The search of Soviet scientists for a critical reassessment of the broader cultural effects of modern science and the ongoing technological revolution is still sporadic and lacks an open, direct, and fundamental confrontation with the key problems. So far the boldest steps have been made by individual members of the Academy of Sciences of the U.S.S.R., the men with distinguished careers in science.

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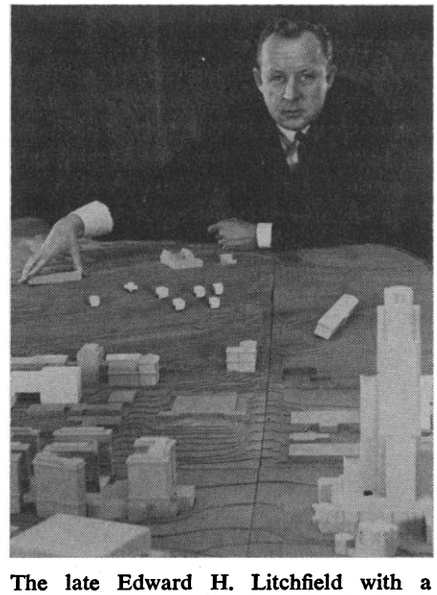
NEWS AND COMMENT

Edward Harold Litchfield: An Administrative Career Cut Short

Edward Harold Litchfield, 53, chancellor of the University of Pittsburgh for a decade, was found dead on Saturday, 9 March, after the private plane in which he and his family were riding crashed into the fog-shrouded waters of Lake Michigan near Chicago. (Also on the plane were his wife Mary, 41; his two youngest children, Ted, 10, and DeForest, 5; his mother, Ethel Litchfield, 80; and the pilot, Jim Looker. Dr. Litchfield's body was found soon after the crash; the others were not found immediately. Dr. Litchfield also had three older children, who were not passengers on the aircraft.)

The story of Edward Litchfield, a hard-driving administrator, was one of those rare lives about which a significant novel or biography could and should be written. In many ways an outstanding "success story," Litchfield's career tells much about American university education and about big business. Edward Litchfield lived on a grander scale than most educators; if his failures were more publicly known, it should at least be remembered that he also attempted more than most men.

The son of a Detroit postal clerk, Litchfield received his Ph.D. in political science from the University of Michigan in 1940, 4 years after being awarded a bachelor's degree from that institution. After World War II, Litchfield became director of civil administration for General Lucius D. Clay's government of occupied Germany. In 1950, he became professor of public administration at Cornell; during his years at Ithaca, he served a 3-year stint as the first Executive Secretary of the American Political Science Association and founded the *Administrative Science Quarterly*. As Dean of Cornell's Graduate School of Business and Public Administration from 1953 to 1955, Litchfield further solidified his many associations with industry which were to give an unusual character to his role as an educator. Litchfield served on the board of several corporations. At the time of his death, his main business responsibility was the chairmanship of the S.C.M. (Smith-Corona Marchant) Corporation, which he had held for the last 12 years. He is reported to have greatly increased S.C.M.'s profits.



The late Edward H. Litchfield with a model of the University of Pittsburgh where he served as chancellor from 1955 to 1965. Litchfield's body was found last Saturday, 9 March, after his private plane crashed into Lake Michigan near Chicago.

In 1954, at the age of 41, Litchfield was asked to assume the chancellorship of the University of Pittsburgh. At that time, Pittsburgh, primarily a "street car" college for commuters, was distinguished mainly by its football teams and by its central skyscraper building —the Cathedral of Learning. Pitt's trustees and other leaders of the powerful Pittsburgh business community wanted to turn Pitt into one of America's great universities. This was a difficult assignment, especially in view of the fact that Pitt was basically a private university with a small endowment and little access to public funds.

Litchfield was a man with the requisite personal audacity to accept that kind of challenge. During his administration, Pittsburgh acquired many outstanding faculty members and improved its physical facilities. One example of this progress was that the