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## Historical transitions in the socio-cultural position of science

“We have seen in the course of history institutions grow up, stagnate, and die away.... How do we know that the same will not happen and, indeed, is not happening to modern science?” — this is the question posed by J. B. Bernal (1939: 11) in his book “The Social Function of Science,” which is actually an approach to rather than a precise history of science.<sup>1</sup> He looks for an answer to this question in the assimilation of the history of science into the general history of civilization, in the ties between socio-economical and scientific development, and in the transition of science into an active social factor.

The social function of modern science, serving with equal success the forces of good and evil, today seems an insufficient guarantee of the supposition that science will avoid the fate of “science of the Hellenistic times, which had also become an institution, but it faded away long before the society in which it had been born was itself destroyed” (Bernal, 1939: 11). Indeed, the interrelations of science and practice, as well as with the rest of the cultural spheres, generates today a wave of criticism against its dominant socio-cultural position.

Obviously, the question here is how will it be possible for science to survive in the system of spiritual culture, to acquire and preserve a position of socio-cultural prestige. This question has not lost its actuality for fifty years. Its answer requires a new turning to history for a culturological reconstruction of science in order to disclose the mechanism of the formation and institutionalization of its models of activity in the framework of the culture which generates it.

Our basic thesis here is that the survival of science and the building up of its unique system characteristics are results not so much of social stimuli and the interaction with practice, than of the consecutive adoption of different models of activity, which build upon the specificity of other cultural spheres. This makes possible the formation of its own model of activity, and the establishment of science as a cultural product with its own criteria of evaluation more universal than those of the other cultural spheres. Such genetic ties with the models of activity of other cultural spheres, models which are present as elements of the specifically scientific one, are the historical

guarantee of the preservation of science as a socio-cultural institution, irrespective of the possible changes in its socio-cultural position. Science during the Hellenistic period is a good example of social institutionalization in the absence of such ties, i.e., which is not preceded by a cultural institutionalization.<sup>2</sup>

Insofar as science is already interwoven in the activity structure of the system of culture and actively participates not only in the exchange of results, but in an exchange of models of activity, a new "Hellenistic time" for science is not possible. Its favourable or unfavorable socio-cultural position, located either in the centre or at the periphery of intellectual life, can only stimulate or delay its development. This actual socio-cultural position affects this rate of development in two ways. On the one hand, it determines the concrete balance between science's ability either to adopt or impose models of activity. On the other, it also determines the specific balance between the social function of science and the actual function of science for its own sake. This latter becomes possible as an existence of science without the function of assisting practice, as far as its functioning is legitimated for the sake of human culture.<sup>3</sup> This normally absent link in the chain of logical reasoning, which we called cultural institutionalization, is one of the reasons for the appearance of the opposing extremes of scientism and anti-scientism, which either confirm the place of science as a spiritual and social leader with the suppression of the rest of cultural traditions, or deny its right of existence altogether. Between these two positions we can locate the anarchical notion of the development of culture without central and peripheral positions, with the active intervention of society for presenting equal competitive opportunities to all cultural traditions.

P. Feyerabend, in his attack on the privileged social position of science — which, according to him, was achieved not so much because of results of science, but rather by the system of organizational measures supporting it — is of the opinion that it is impossible to substantiate the superiority of its models of activity in respect to other kinds of intellectual products. "Science

has always enriched itself on account of external scientific methods and results, while the processes in which a significant part of science has been present have silently died away," claims P. Feyerabend (1986).

A more benevolent criticism of the authority of science, which does not envisage changes in its social function or position, is simply an appeal to its morality, as Prigogine and Stengers claim. According to them, one of the substantial features of the metamorphosis of contemporary science, along with the new dialogue with nature, is the new dialogue with the rest of the cultural spheres of activity, upon which modern science is accustomed to pass judgement patronizingly. Prigogine and Stengers stress that, "we have also to learn to respect other intellectual approaches, irrespective of whether they refer to the traditional mentality of sailors and peasants, or to the methods of other sciences, to realize once again the necessity for respecting variety" (1989: 305).

Even Bernal, who firmly believed in the scientifically stimulated social perspective and opposed the anarchistic idea of its socially uncontrolled development, foresees a possible change in the social function of science in the future. According to him, the profound investigation of the history of science will present a possibility to determine not only what is, but what may become the social function of science (1939: 12). In the context of Bernal's attitude toward science, this does not in any case mean retreating from the social position and authority which science already possesses. It is rather an appeal for an adequate improvement of this function in conformity with the actual requirements of social progress.

There is no doubt that science today utilizes the advantages of the most authoritative cultural sphere, to which science owes its central position in social life. The attainment of this position was achieved after a sufficiently long existence on the periphery of the system of culture, which was due to the lack of legitimacy of the specific cultural product it produced. The confirmation of knowledge as an unique intellectual product with its own criterion for the

evaluation of its cultural affiliation and importance is a result of the development of culture, proceeding through a consecutive change of cultural dominants with activity models constantly increasing the scope of their contents.

Different spheres of cultural activity have played dominant roles in cultural development at different times in the history of society. Every one of them has strongly influenced the development of science and has taken part in the creation of its professional norms and system features. The results, the models of activity, and methods established in the process of improvement and social functioning of these spheres inevitably turn into examples and models for imitating the other cultural spheres, which is a mandatory condition for their actual existence and reproduction.

One of the first forms of the cultural manifestation of science is based on stressing its competitive spirit and the onset of the form of intellectual game, which furnish the norm of the cultural inclusion and socialization during the ancient Greek period of the history of culture.<sup>4</sup> The image of science as an intellectual game with specific rules, in which there are many participants and one winner, is not only a part of the strategy for survival, but also a moment of the strategy of development, which respectively requires subordination to the cultural norm and value orientation of the epoch.

Irrespective of the universal and all-cultural character of the game, which has an old tradition of creative transformation of social interrelations into value-ethical and functionally-willed plans, the game is institutionalized, develops, and is reproduced as a norm of social activity in a determined cultural sphere. It can be stressed that such a cultural sphere is sports, which played the role of a cultural dominant of primary social importance at the beginning of modern civilization during its ancient Greek period (Zaitsev 1985). The game is a stage of the philogenesis of, for example, European culture, which might be different as an individual stage in the ontogenesis of every specific type of culture. On the other hand, it is also a stage in

the philogenesis of every cultural sphere, such as science, and it can be seen in the ontogenesis of each specific type of science — ancient Greek, Medieval, Renaissance, or modern science.

A change in the historical situation and the dominant socio-cultural sphere also changes the norm for the socialization and the preservation of the still relatively non-diversified cultural unity in each one of the spheres of activity. In this respect, the only possible image of science is its presentation as a kind of “religion” with the mystical and esoteric character appropriate to an activity oriented to aims rather than to rules. Regardless of the postulated absolute incompatibility of religion and science, there exist some features which bring them together. Religion, as well as science, is paradigmatical. The remoteness and unattainability of the authority, which was fully attainable and earthly for the ancient Greek period of cultural development, creates conditions for the establishment of a collectivity, not so much in respect to the activity in question, as to the results. However, the technology of attaining the results defined by the paradigmatic goal remains individual, and not collective. The competition is for the means which lead more directly to the aim, without undermining the authority and the paradigms accepted on faith. Alchemy is a typical example of such a science subordinated to the norms of activity of this cultural sphere which seeks a universal recipe or formula as a basic form of medieval thinking (Rabinovich 1984: 68) in order to represent a criterion for the evaluation and legitimization of its product. Medieval science is an excessively long paradigmatic stage of science’s history, through which the prescribed norm adopted here leads to an activity structure of scientific experimentation.

Science entered the era of the Renaissance under the flag of art. As such, it does not claim cultural leadership, but is subordinated to the general spirit of the new era. This spirit is not in itself rational, but is rather a humanistic criticism of a past viewed to be irrational. This new image for the socialization and cultural assimilation of science in the form of art provides generous financing and patronizing

protection. Science now bears the image of a creative activity as an individualistic, monologicistic, anti-paradigmatic expression. Collectivity is now manifested only by the standard of the means for acting, while the modelling and setting of its aims are individually conducted. Science in such a Renaissance style is subordinated to symbolism and metaphor, to pompous phrase and literary ornament. However, it does not succeed even with this image to achieve a focus on itself since it does not find in esthetics a satisfactory criterion for the evaluation of its product.

The adoption of models of activity from other cultural spheres prepares the discovery of that type of activity specific to science, namely, the production of objective knowledge in which a certain standardization of the procedures leads to an exact recreation or duplication of the results, something impossible in any other cultural sphere. This cultural prehistory of professional science is, moreover, a search for a criterion for evaluating its own intellectual product, which allows science alone to take part in a competitive struggle for a leading place in culture. The commensurability of cultural spheres in their struggle for cultural leadership is found in their criteria for evaluating the intellectual products produced by them, and not in their products themselves. The modern image of science combines science with technique, which provides a guarantee for the reproducing sphere of activity. This identifies the result of that activity as neither intersubjective (as with ancient Greek science), nor transsubjective (as with medieval culture), nor subjective (as with Renaissance culture), but as objective.

The diversity and wealth of the models of activity of science confirms the superiority of its more universal criteria for the evaluation of its intellectual product and transforms it into a new systematic integrating factor in culture. The epoch of Education is the epoch of the cultural institutionalization of science, which forms a new appreciation of science in human consciousness as having both individual and collective value. It is accompanied by the advent and development of scientific self-consciousness, which at last now looks for an

answer to the question of the meaning and problems of scientific activity. So, the appeal that science has to be sanctioned and separated from the state, as is religion, which deprives it of the social function attained (according to Feyerabend) through "political, institutional and even armed pressure" (1986: 514), is actually an appeal for breaking the democratic principles of the development of culture. The entire history of European civilization serves as proof of the fact that the state chooses for its ally the most authoritative cultural institution in order to strengthen its own prestige. The union of the institution of the state with sports, religion, or art in different stages of European history is no less culturally based than its contemporary union with science. This union is only apparently represented by the social function of these spheres, whose advantages for social progress at the time of institutionalization will doubtless play a special stimulating role in the development of a given sphere and the disclosure of the full possibilities of its social functions. But the state is not capable of providing a dominant position to any one cultural sphere if that sphere has not already gained in advance the leading position in culture. According to this principle, in order to remove science from its leading position, a new sphere of cultural activity is needed which is richer in content than science, and which possesses criteria for the evaluation of its own products more universal than those of science.

Even the ideal image of harmonious cultural development must recognise the fact that culture never equally balances the various different spheres of its activity. In every one of the historical periods of the process of socio-cultural development the existence of leading cultural spheres is a necessity, just as in every period of the development of knowledge there exist leading scientific disciplines. The social function and institutionalization of science does not assign to it automatically the position of a socio-cultural leader. This status is attained only through the totality of cultural history, in which science as such is born through the interaction of all the various spheres of cultural life.

## NOTES

1. The 1930's can definitely be considered the beginning of this new approach to the investigation of science, in which are interwoven historical, philosophical, and sociological analysis. See Borkenau (1934), also see: Merton (1938).
2. By the cultural institutionalization of science we understand the process of the establishment of science in the system of culture through an active social effort for its equal participation in the production of spiritual values. This presupposes the acceptance of certain fundamental models of activity taken as characteristics of the system of spiritual activity in the various stages of its history through the mediation of the socially dominant cultural spheres. In this sense, cultural institutionalization precedes and is a necessary condition for social institutionalization, not so much in respect to its emergence, as to the preservation of its formal structures.
3. Emphasizing that the emergence of the historical possibility of science is conditioned by culture, D. Ginev observes that it is precisely culture which determines the social interest for the emancipation of spiritual labor, not as "serving practice," but as activity "for its own sake" which itself determines the criteria for its significance, validity, and truthfulness. See: Ginev (1989: 141).
4. There is a long list of authors, such as R. Merton, M. Polanyi, J. Ben-David, W. Hagstrom, and others, who are interested in the investigation of the functional significance for science of the fact that it is a source of competition for mobility, novelty, differentiation of meaning, intensity, and so forth. However, they are not yet oriented to the search for its historical dimensions in the model of activity of science, and in a greater number of cases consider the beginning of such competition as a product of "big science." In a much broader socio-cultural context, the functional dimension of the game is sought in the areas of psychology, sociology, aesthetics, and the methodology of science, which begin to form the contents of a systematically connected interdisciplinary area.

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