

ISTITUTO DELLA  
**ENCICLOPEDIA ITALIANA**  
FONDATA DA GIOVANNI TRECCANI  
IL DIRETTORE GENERALE

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THE PROBLEM OF INTER-THEORETIC  
RELATIONS

Discussion Paper

Thirteenth ICUS

Washington, September 1984

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Recently I have received a work which I did not know although it appeared in 1982, namely Prof. G. Radnitzky's K. Popper: a favor de la verdad y la razon. In it the eminent Colleague stresses once more the importance of history of science. History of science has become a rich and articulate historiography. The only aspect in which history is virtually independent from historiography is represented by the science classics who speak to all those who approach them regardless of any theory on historical events. During the last months, my livre de chevet has been William Harvey's Exercitationes de generatione animalium. (1) What a great, immortal work! Though it appeared in Amsterdam in 1651, it seems as if it had been published yesterday.

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The research on the generation's mystery of living organisms which the great Hervaesus pursued, is in no way diminished in its value by molecular biology and genetic code, but to the contrary is enhanced by the latter. Undoubtedly, the mind of someone like I, is filled with historiography, but Harvey's pages represent an outstanding example of how history can speak, through a classic, to every one about problems unchanged in the scientific reason.

Before Harvey, my livre de chevet was Hippocrates in a beautiful Italian edition containing those writings which are most probably his (2). And from Hippocrates I have adopted the habit of prognosis, the prognosticon, as the Master of Kos used to say. Having read some of the contributions on the subject

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of our Committee, Unity of the Sciences, I told myself: here is something for which the prognosis must be uncertain or unfavourable, and this something is reductionism. But at this point, other intellectual experiences came to my mind, as well as the reading which had brought them about. And in particular, The Golden Bough by James Frazer (3), a masterpiece in anthropology, then and now. Starting with the ritual murder of the priest - king of Diana's temple on the wooded slopes of the Nemi lake, Frazer has described similar ceremonies through which archaic humanity sought to propitiate the birth of all that was young and new. I believe that killing reductionism could bring us considerable advantages, which consist in a fundamental regeneration of our views of the world. I would like to mention one

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last recollection: Max Planck's beautiful lecture: Die Physik im Kampf um die Weltanschauung, which he held in Berlin in 1935, foreboding the oncoming tragedy in his country. Science is one, and physical, biological and human sciences are in agreement with each other: the struggle of physics for a comprehensive conception of the world involved all researchers, all scientists.

According to Planck, a struggle was being fought concerning the concept of cause: without the concept of cause -in the connotation of causa formalis, scientific knowledge was doomed to fall in its entirety. But the object of the knowledge is, precisely, the world, and science in its sum total is a vision or conception of the world. Nobody has ever had all of science in his pocket or in

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his drawer, hence science as history and as historiography. But a science, also, in which the defunct are plentiful: if reductionism were to join the miasmas, the phlogiston and the ether, no one would mourn. The more so, if the departing of reductionism could have the same beneficial effect which the death of miasmas had on microbiology, that of phlogiston on quantitative chemistry and the end of ether on the birth of space-time.

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Oulios. The only true reductionist has been Parmenides, according to the following axiom: differences do not exist, all and one are the same, the essence of all-one is being, reason's choice is between "is" and "is not", truth is represented by "is". Why do I maintain that Parmenides has been the only reductionist? Because all the others have reintroduced difference in the structure of reality: and differences can be connected, not reduced. The only way to reduce differentness is to negate it: Parmenides' lesson is great, very great.

We are, then, in a world which contains differentness: because Parmenides did not succeed in the titanic effort of negating it. He contradicted himself: his world kept within itself at least two things different: truth and error, wisdom and folly. We are in a dishomogeneous

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world and reductionists have a very hard time. Thus the attempt has been made to start what I would term a minor reductionism. A class of entities is negated, as Galilei does when negating essences -or, one should say: the knowledge about essences- in his third letter to Marco Welser on sunspots, or as he does when negating secondary qualities of bodies in the Saggiatore. Mach, instead, has asserted sensations and negated categories. He, perhaps, is the true reductionist who reaches us through the Vienna Circle. However, also minor reductionism fails. Reductionism, we said, fails because reality contains differentness and is dishomogeneous. Minor reductionism fails because reality contains all the differences that can be (saying: 'that can exist', would be inaccurate). Reality is not infinite in extension but in form. Science



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has opened up to the concept of unlimited variety of forms with Darwin. If reality's archetypal texture were not unlimitedly varied there would be no evolution. Darwin is in the great morphologic tradition of Harvey - Wolff - von Baer. But this deserves a long discussion and I may perhaps refer to one of my recent writings. (3)

All the contributions on the subject of our Committee: The Problem of Inter-Theoretic Relations, reflect a probably irreversible crisis of reductionism. They are outstanding contributions which, in some cases (Prisnas, Kanitscheider) open up new outlooks for epistemology and philosophy of nature. Holistic conceptions which seemed obsolete, regain their interpretative value in that "space of configuration" in which the objects of contemporary science are placed. Undoubtedly it is

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necessary to save analysis: there is no returning to a science of definitions. But the constructive process must integrate analysis. Analyze, construct: in the "space of configuration" forms, objects are born out of a twofold attitude of thought. Then there is the hinterland of this spatiality, even though logically conceived: there is the "pregeometric" which Kanitscheider stresses particularly. However, in pregeometry, in the "a-spacial configuration of the pregeometric", historic knowledge, history of science integrated with transcendental knowledge, will have to be taken as a reference point.

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N O T E S

- (1) HARVEY, W.(G), Exercitationes de generatione animalium, Amsterdam 1651
- (2) HIPPOCRATES, Works, Edited by M. Vegetti, Turin 1968
- (3) CAPPELLETTI, V., Evoluzione ed evolucionismo, in "Clio", XX (1984), 2, pp. 1 - 20