Acta Scientiarum
http://www.uem.br/acta
ISSN printed: 1679-7361
ISSN on-line: 1807-8656
Doi: 10.4025/actascihumansoc.v37i2.32058

Editorial

With great satisfaction we are publishing for the first time an issue of the Acta Scientiarum – Human and Social Sciences mainly dedicated to themes on the Philosophy of Science, with articles by researchers from Brazil, Argentina and Uruguay. We would like to heartily thank the writers and we feel it is proper to give a brief note on the development of the Philosophy of Science in the 20th Century.

As a professional discipline, different from other philosophical fields, the Philosophy of Science is a recent affair. It originated in the early 20th Century with the founding of the Vienna Circle under the aegis of the philosophers Moritz Schlick, Rudolf Carnap, Otto Neurath, Hans Hahn and others, strongly influenced by the ideas of Henri Poincaré, Gottlob Frege, Bertrand Russell and Ludwig Wittgenstein. The rise of the Vienna Circle was the result of a tradition in the philosophical analysis of Science which in the 19th century had Emile Meyerson, Henri Poincaré, Pierre Duhem, Hermann von Helmholtz and Ernst Mach (the latter was substituted by Schlick at the University of Vienna in 1922, starting the process for the foundation of the Circle) as its predecessors.

Under the influence of the Vienna Group, several similar groups were founded in Berlin, Warsaw, Prague and London in the 1930s and elaborated, not without simplification, Logic Empiricism, Neo-positivism or Logic Positivism. It was the first professional movement of the Philosophy of Science providing institutional identity to the discipline. Its most well-known members conceived Philosophy as an entity for the analysis and reconstruction of scientific language to distinguish the legitimately knowable from the meaningless. The criticism of Metaphysics, the logical analysis of language by Russell´s atomism and the project of a unified science which, under different strategies (sometimes incompatible), were defended by Logic Positivists.

The rise of Nazism shattered a basically European movement. Although some of its members, such as Carnap and Carl Hempel, were active during their exile in the US, by the 1950s Logical Empiricism faced difficult and unsolvable problems. Problems in the development of inductive logic of the scientific method and the establishment of a clear distinction between the pseudo-propositions of Metaphysics and the true proposition of Science gradually disrupted the bases of the movement. In fact, by mid-20th century, its main proposers had very different positions from those at its foundation. Karl Popper´s criticism against induction as the basis of the scientific method and Willian Quine´s attack against the analytic-synthetic distinction strengthened fallouts of logical empiricism without an alternative of similar importance.

Since the 1940s, different thinkers have been exploring alternatives to understand the function of science. The pathways were different from those of Neo-positivism. Science historians such as Herbert Butterfield, Alexander Koyré and Stephen Toulmin, the philosophers Gaston Bachelard and Norwood R. Hanson, and scientist Ludwig Fleck introduced several approaches to science which diverged from Logical Empiricism due to their pronounced sensitiveness for the true history of science and to their lack of bonds for logical and syntactical issues which were so dear to Empiricists.

There is the idea, more or less latent, that the image of science proposed by Logical Empiricism does not coincide with Science´s true history. The premise would be a touching stone for the later development of the Philosophy of Science. The year 1962 was crucial due to the convergence of trends capable of molding the process which would not only be an alternative to Logical Empiricism but would broaden the frontiers of the discipline. It was also the year in which Thomas Kuhn published The Structure of Scientific Revolutions and Paul Feyerabend published Against Method: Outline of an Anarchistic Theory of Knowledge, starting the historicist watershed of the Philosophy of Science.

The historicist concept inaugurated by Kuhn and Feyerabend is not totally hegemonic either in the 1960s or nowadays. However, it may be said that since its emergence it became the predominant Philosophy of Science and in many respects it still is. The historicists´ proposals suppose not merely that conceptual contents of scientific theories are historically viable but that the methodological rules in the selection of criteria by which a theory is evaluated, and the most basic suppositions of science are historically variable and subject to contextual changes. This boils down to abandoning a universal scientific method and a unified scientific language. The task of the Philosophy of Science is not to build a canon that distinguishes what has meaning from what does not, or what is science and what is not. The philosopher´s task is the historical reconstruction of the development process and the choice of scientific theories. Reconstruction requires only historical criteria since there are no methodological or epistemological criteria introduced by the philosopher. The only criteria are those accepted by each community in each historical context.

Several specific issues may reinforce the distance between a new historicist approach and the Philosophy of Science in the first half of the 20th century. In Hempel´s and Ernst Nagel´s classical concepts, the substitution of theory a by theory b implied that principles reduced to b and all the facts within the dominion of the motives remained within the explicative dominion of b. The theoretical and characterized change implies that the object of alteration is the content of the hypotheses of each theory but not the meaning of the terms included in the presuppositions. The explicative reduction and the invariance of meaning provide a stable and sustainable image of scientific progress.

Each in his own manner, Kuhn and Feyerabend investigated the image of science inspired by these theses through the idea that theoretical change implies in the variation of meanings of most terms in the theories. The hypotheses of one theory cannot be expressed in the language of the rival theory. If two successive theories do not employ terms with the same meaning, it becomes impossible that the terms of the abandoned theory are reduced to the new theory since reduction, as a rule, supposes the invariance of meaning. Further, the thesis of incommensurability widens the consideration spectrum of theoretical change bringing forth, within the processes of scientific revolution, not merely variations in theoretical hypotheses and their meaning but also the modifications of other central elements of scientific activity such as values, metaphysical premises and methodological rules.

Kuhn´s and Feyerabend´s proposals became a renewal of the Philosophy of Science, with highly original contributions which, up to the present, measure the debate´s rhythm. However, they produced a problematic image of the central notions of the Philosophy of Science, such as objectivity, progress, truth and rationality. Several critics accused Historicist Philosophy of converging towards irrationalism, denial of scientific progress and the cognitive legitimacy of Science. Kuhn distanced himself from these accusations whilst Feyerabend faced them with zest.

Several derivations of the historicist watershed emerged in the 1970s. They were greatly committed to provide a perspective of scientific involvement which would be philosophically consistent and, at the same time, resistant to the true History of Science. Feyerabend explores the ideological implications of Science in contemporary societies within a highly critical perspective. Kuhn discusses the semantic aspects of scientific languages giving place to the notion of taxonomic incommensurability. Imre Lakatos considered scientific revolutions as transitions between investigation programs; Larry Laudan considered scientific traditions as reference; Hilary Putnam discussed conceptual schemes; Empiricist Philosophy of Science is reinforced by the republication of Bas van Fraassen´s works. As from the 1970s, the structural conception of scientific theories, triggered by the efforts of Joseph Sneed, Wolfang Stegmüller, Ulises Moulines and others integrates the Kuhnian approach with the development of a formalism that solves the selection between rival theories and scientific progress. The strong program of the sociology of science, which originated from the works by David Bloor and Barry Barnes, should be mentioned, together with the constructivist derivation by Bruno Latour and Steve Woolgar, who are doubtlessly the most radical successors of Kuhn´s original theses.

As from the 1990s and perhaps earlier, what we may call the post-Kuhnian Philosophy of Science has developed through ramifications and diversification, making almost impossible to trace its main currents. One of the research themes with great institutional development lies in the field of studies of Science, Technology and Society. It is the result of several studies on the relationships between Science and the social context. One should also mention the representatives of scientific realism, such as Ian Hacking, Richard Boyd, John Worrall and Stati Psillos, and the philosophers of scientific experimentation, such as Joseph Rouse and Hasok Chang. The special philosophies of Science should also be included: the Philosophy of Physics, Chemistry, Biology and specific fields such as the philosophic study of the Theory of Evolution and the Philosophy of Quantum Mechanics. The vast field of the philosophy of Social Sciences should also be included, foregrounded by the matrixes described above and by the elements of Hermeneutics and Phenomenology.

The articles published in current issue belong to the several trends listed above and are representative samples of the state-of-the-art of the themes. In the article "Contra el escepticismo: la teoría de las hipótesis de Johannes Kepler", Diego Pelegrin immerses into one of the main processes of the Copernican revolution: changes in the status of astronomic hypotheses quit being mere calculation instruments to save the phenomena and become pretensions of truth on the structure of the planetary system. Johannes Kepler is a central character in the process due to his introduction of elliptic orbits and to his debates with those contrary to Copernicanism. In his paper on "Mosaicos enciclopédicos: Neurath e d'Alembert sobre Ciência e Demarcação", Ivan Ferreira da Cunha forwards two influential characters, albeit separated in time and space. In spite of differences, Neurath and d'Alembert are united in their defense of the encyclopedic conceptions of Science reflected within their concept of science and within the political struggles the two strived for.

In the article "Realismo científico y entidades inconsistentes", Matias Alejandro Guirado writes a very relevant analysis of naturalized realism of inconsistent entities, proposed by Mark Colyvan, through a critical strategy that shows that historical cases that foreground Colyvan´s thesis do not comply with the interpretation which Colyvan tries to derive from them, or they, at least, accept alternative interpretations that erase the type of realism defended by Colyvan. Amélia de Jesus Oliveira discusses "Evolução e Mudança conceitual na História da química: considerações de Kuhn e Duhem", on the change of theories in Chemistry as prime matter to reveal similarities between the ideas of Kuhn and Duhem, focusing on the changes in meaning and in the reconstruction of past theories by the Science historian. A similar approach may be observed in the article "De los esquemas conceptuales a los paradigmas. Evolución del pensamiento de Thomas Kuhn, 1957-1962", by Pablo Melogno and Sofia Nazira Ache. The article arguments that, contrary to predominant interpretation, the first two books by Kuhn, The Copernican Revolution (1957) and The Structure of Scientific Revolutions (1962) are not part of the same philosophical and historiographical project but reveal differences on the general idea of Science that Kuhn employs in the two works. In his article "Realismo científico hoy: a 40 años de la formulación del Argumento del No-milagro", Bruno Borge discusses Hilary Putnam´s well-known argument and assesses the strategies developed in its defense and the main critiques. Finally, Roberto Miguel Azar writes on "Algunas grietas en el Empirismo Constructivo de Bas van Fraassen", in which he analyzes the type of empiricism in which van Fraassen is involved to avoid the postulation of metaphysical entities within the realist context. Azar observes that van Fraassen´s empiricism fails to impair weighty metaphysical consequences. The above compromises van Fraassen in certain varieties of the realist condition which he has questioned historically.

Although thematic, current issue of the Acta Scientiarum exhibits its multidisciplinary characteristic within Human and Social Sciences. The articles summarized above are followed by others from Administration, Education and History. Juliana Marangoni Amarante and Fabiane Cortez Verdu present "Um levantamento de publicações sobre internacionalização de instituições de ensino superior", a survey on publications issued between 2009 and 2013 on the internationalization of the Institutions for Higher Education by analyzing the main national and international events and journals in Administration.

Three articles on Education are being published. José Passos Lopes´s article titled "A representação social da tortura no ensino-aprendizagem da matemática: análise semiótico-psicanalítica" deals with the perception of Math teaching among Pedagogy students by means of a semiotic-psychoanalytic tool. The article "Mãe, mulher... professora! questões de gênero e trabalho docente na agenda educacional contemporânea" by Jarbas Dametto and Rosimar Serena Siqueira Esquinsani, compares the materiality of teaching, gender issues and educational agenda, taking the media as the producer of representations. Further, Luciano Plez Melo and Leila Maria Ferreira Salles deal with the instituting functionality of the school by investigating certain factors with significant potential, registry contingents or launchers of practices and possible indicators in the only state school in Igaraí SP Brazil.

The last article deals with History: "'Que o povo de Porto Alegre, especialmente as classes trabalhadoras', saiba, proteste e se manifeste: o caso Sacco e Vanzetti" by Eduardo da Silva Soares and Glaucia Vieira Ramos Konrad, who review the case of the two Italian anarchists and who identify the main spaces for manifestations in defense of the anarchists and the main speakers during such events in Porto Alegre, Brazil.

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