ABSTRACTS

B5.3 Historical Aspects in the Philosophy of Science

On Pierre Duhem’s Two Epistemologies, “high” & “low”

Horia-Roman Patapievici, Philosophy, University of Bucharest, Bucharest, ROMANIA

In the literature, Pierre Duhem’s epistemology is habitually deduced from his works on the philosophy of science (La Théorie physique: son objet et sa structure, 1906; ΣΩΖΕΙΝ ΤΑ ΦΑΙΝΟΜΕΝΑ. Essai sur la notion de théorie physique de Platon à Galilée, 1908). One can give reasons that, in his works on the history of science (Études sur Léonard de Vinci, 3 vols., 1906-1913) and Le Système du Monde, 10 vols., 1913-1959), Duhem uses as his working epistemology a richer one than that described and illustrated by his actual epistemological writings. Borrowing from the classic christology model (high christology & low christology), I refer to Duhem’s two epistemologies as “high” and “low” epistemology. I demonstrate that Duhem’s continuitism only refers to the poor or “low” epistemology: in the rich or “high” epistemology, there is a “theological revolution” (la révolution théologique) and there are instances of “birth” (naissance) of science. I also argue why Duhem did not contradict himself when suggesting two different dates for the “birth” of modern natural science. I show that, in the “high” epistemology, the traditional conflict between internalism and externalism is far weaker. The point of view this article proposes is that, in Duhem’s work as an epistemologist and historian of science, there are two epistemologies at play: a theoretical, conscious and explicit epistemology (the low epistemology) and a working, implicit and practical epistemology (the high epistemology). This epistemological “dualism”, thus, explains and solves most of the contradictions or complications he has been reproached.

Thomas Kuhn’s Changing Conception of the External World

Erkan Bozkurt, Philosophy, Ege University, Izmir, TURKEY

Thomas Kuhn, in his famous treatise The Structure of Scientific Revolutions which is about the scientific enterprise and its historical change, distinguished between two meanings of the world concept. The first meaning, is the “perceived world” which scientists have direct access through their immediate experiences with their eyes and instruments. That world is shaped by the dominant paradigm of a mature field and it is subject to change through subsequent paradigm changes. The second meaning refers to the mind-independent, immutable external world which scientists have no direct access whatsoever. In order to explain how supporters
of different paradigms perceive the world differently, Kuhn proposed a theory of perception which specifies the contents of these two worlds. The first consists of the stimuli that impinge on our senses and the other consists of the sensations derived from those stimuli. According to Kuhn, neuro-cerebral mechanism of individuals in the stimulus to sensation route is conditioned by their common biological phylogeny and programmed further by their socialization in respective communities through scientific practice. So, as a result, scientists belonging to communities with different paradigms experience the world differently. However, through the end of his career, Kuhn leaves this conception of the external world for an evolutionary conception of ecological niche. According to this conception, Kuhn replaces the one, big, mind-independent external world with variety of niches which are mind or culture dependent. However, these niches are also solid, substantive and resistant to arbitrary hypotheses which do not obey to their behaviors. In this presentation, I will discuss where this move in Kuhn’s conception refers to in the realism anti-realism debates regarding the existence and knowledge of the external world. Further, I will argue that this position brings a naturalistic theory of scientific knowledge which may be viewed as an evolutionary cognitive approach.

Pragmatic Realism, Idealism, and Pluralism: A Rescherian Balance?

Sami Pihlström, Helsinki Collegium for Advanced Studies, University of Helsinki, University of Helsinki, FINLAND

One of the most remarkable features of the kind of pragmatism committed to advancing scientific rationality and objectivity that Nicholas Rescher has defended for decades is its attempt to maintain a balance of a number of philosophical ideas that are often in tension with each other. Rescherian pragmatism is realistic (even metaphysically realistic), but it is also idealistic (in the sense of “conceptual idealism” or “pragmatic idealism”); moreover, its realism and objectivism do not seem to preclude a pluralistic conception of a variety of different perspectives (or “systems”, “conceptual schemes”) we may employ for conceptually categorizing reality. These views are highly relevant to the general realism discussion in the philosophy of science, to which Rescher has been a key contributor for decades.

Starting from some of Rescher’s own formulations of these and related ideas – spanning several decades of systematic philosophical work, from Conceptual Pragmatism (1973) via A System of Pragmatic Idealism (1992-94) to Realistic Pragmatism (2000) and beyond – this paper will critically examine the Rescherian attempt to overcome the potential conflicts between realism, idealism, and pluralism. I will, inevitably moving significantly beyond Rescher’s own position and its historical development, seek to articulate a pragmatist approach whose key aim is a critical balance of these allegedly mutually incompatible philosophical commitments. I will suggest that the kind of holistic pragmatism defended by Morton White (who, like Rescher, is a somewhat neglected pragmatist thinker), since his Toward Reunion in Philosophy (1956), is helpful, albeit not unproblematic, in integrating pragmatic realism, idealism, and pluralism. I will argue that the Rescherian type of pragmatic
realism-cum-idealism, even when enriched by White’s holism, needs to take seriously the Kantian (and, therefore, transcendentally idealistic) background of pragmatism, pluralistically reinterpreted.

The Dynamic, Relative or Pragmatic A Priori: How philosophers of science have used constitutive elements of science to model conceptual change

David Stump, Philosophy, University of San Francisco, San Francisco, USA

In science, there are principles and theories that are taken for granted before empirical inquiry can begin. While these theories and principles may have been confirmed empirically, some fundamental principles or laws and all of the mathematics upon which science depends have a more problematic basis, since these principles are very difficult to conceive of as being empirically grounded. Thus, some of the principles and all of the mathematics appear to be a priori knowledge, serving as constitutive elements in science that play a special role in scientific theories, given that they are necessary preconditions to further inquiry. In order to account for conceptual change in science, Friedman revived Reichenbach’s idea of a dynamic a priori, showing that conceptual revolutions occur in science when there is a change in what had been taken to be a priori knowledge. We find similar alternative views of the a priori in Cassirer, Lewis, Pap, Kuhn and Hacking. However, the term ‘a priori’ as misleading given that what is functioning as a priori knowledge is not actually a priori at all in the traditional sense. The crucial point is that we have various theories of the constitutive elements in science, Kant’s, in which the constitutive elements really are a priori, i. e. necessary and fixed, and others, in which the constitutive elements are not fixed, so that we can understand conceptual change in science as changes in the constitutive elements. I set out and defend a special role for constitutive elements in science, a pragmatic view that there are principles and theories that are necessary preconditions for the possibility of a science, but which stays closer to naturalism than the neo-Kantian position advocated by Friedman, who also defends a role for constitutive elements in opposition to Quine’s holism.