Kantian aspects of Poincaré's epistemological thoughts on XIXth century physics

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Some of the Kantian principles and distinctions, considered in the Inaugural Dissertation of 1770 and developed in the First and Third Critics, illuminate Poincaré's methodological cogitations on the nature of XIXth century physics. His epistemological thoughts concerning the evolution of Physics that culminates in Maxwell's final approach to Electromagnetism, published before and around the year 1900, include an analysis of the principles of convenience (need of order, simplicity and harmony), the constitutive function of mathematics, the general methods of mechanical modeling of phenomena, the hierarchic organization of the system of natural laws and principles, and their changeable status.

A study of analogical reasoning based on William Harvey's problems and analogies

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In this paper I will study William Harvey's application of analogies in the *Exercitatio anatomica de motu cordis et sanguinis in animalibus.* I will show that Harvey applied analogies in many different ways and that some contributed to the discovery of the characteristic 'action' of the heart and even to the discovery of the blood circulation. The discovery process will be approached as a problem solving process as described in Batens' contextual model. The focus on constraints allows to see Harvey both as a modern in some respects and as strongly influenced by his Aristotelian teacher Fabricius of Aquapendente who propagated a 'natural philosophy interpretation' of anatomy.

History of science and language criticism : A cross-referenced reading of Ernst Mach and Fritz Mauthner

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The subject of this paper will be the correlation between history of sciences and language criticism, based on a confrontation of Ernst Mach's and Fritz Mauthner's philosophical works. We will see that this confrontation is relevant,

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not as much in it specification of the history of philosophy as in its analysis of the interactions between a radical historization of science (Mach) and of language (Mauthner). This will give an input to the discussion of the relationship between the categories of "positivism" and "historism", which is linked to a re-structuration of the field of knowledge during the 19th century, and to the emergence of objectivity as a "scientific virtue", [2], which establishes itself in the interpretative disciplines—thus measuring the impact and the consequences of this historist fashion for the philosophy and historiography of science. Generally the cross-reading of Mach and Mauthner focuses on self-proclaimed "language criticism" as a critique of metaphysics, without questioning the relationship between Mach's "science"/"language" analogy, [1] and a historism which ascribes the critical and legislative power of philosophy to history.

References

[1] Katherine Arens. Mach und Mauthner: der Fall eines Paradigmenwechsels. In E. Leinfellner and R. Schleichert, editors, *Fritz Mauthner: Das Werk eines kritischen Denkers*. Böhlau Verlag, Wien, 1995.

[2] Lorraine Daston. *Objektivität*. Suhrkamp, 2007.

Semantics in type theory

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This talk surveys several transformations and applications of logical type theory between 1925 and 1940. Specifically, we focus on two related developments: (1) several contributions concerning the formalization of the type-theoretic universe and the flexibilization of types will be discussed. (2) Following this, we survey attempts by Carnap and Tarski to express the semantic metatheory of axiomatic theories within a single type theory. Specifically, different conventions introduced in their work to allow domain variation for models of theories expressed in a fully interpreted typetheoretic language will be compared.

Poincaré's two types of conventionalism

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Poincaré presents two kinds of conventionalism but they have not been clearly distinguished. Poincaré argues that certain elements of empirical science can be "erected" (érigées) into principles, that is, they can be taken to be definitely true and never questioned. However, geometric conventionalism has a separate two part justification which is quite different from his justification of the conventionality of principles, consisting of an argument first against the a priori determination of metric, and second against empirical determination of metric. I distinguish two kinds of conventions in Poincaré and show that the arguments for them are not the same.