



From Helmholtz to Schlick: The evolution of the sign-theory of perception[☆]



Thomas Oberdan

Program in Science and Technology in Society, 101 Strode Tower, Clemson University, Clemson, SC 29634, USA

ARTICLE INFO

Article history:

Received 20 December 2013

Received in revised form

2 April 2015

Available online 11 June 2015

Keywords:

Schlick;

Helmholtz;

Sign-theory of Perception;

Structural Realism;

Conventionalism

ABSTRACT

Efforts to trace the influence of *fin de siècle* neo-Kantianism on early 20th Century philosophy of science have led scholars to recognize the powerful influence on Moritz Schlick of Hermann von Helmholtz, the *doyen* of 19th Century physics and a leader of the *zurück zu Kant* movement. But Michael Friedman thinks that Schlick misunderstood Helmholtz' signature philosophical doctrine, the sign-theory of perception. Indeed, Friedman has argued that Schlick transformed Helmholtz' Kantian view of spatial intuition into an empiricist version of the causal theory of perception. However, it will be argued that, despite the key role the sign-theory played in his epistemology, Schlick thought the Kantianism in Helmholtz' thought was deeply flawed, rendered obsolete by philosophical insights which emerged from recent scientific developments. So even though Schlick embraced the sign-theory, he rejected Helmholtz' ideas about spatial intuition. In fact, like his teacher, Max Planck, Schlick generalized the sign-theory into a form of structural realism. At the same time, Schlick borrowed the method of concept-formation developed by the formalist mathematicians, Moritz Pasch and David Hilbert, and combined it with the conventionalism of Henri Poincaré. Then, to link formally defined concepts with experience, Schlick's introduced his 'method of coincidences', similar to the 'point-coincidences' featured in Einstein's physics. The result was an original scientific philosophy, which owed much to contemporary scientific thinkers, but little to Kant or Kantianism.

© 2015 Elsevier Ltd. All rights reserved.

When citing this paper, please use the full journal title *Studies in History and Philosophy of Science*

1. Introduction

The influence of *fin de siècle* neo-Kantianism on 20th Century philosophy of science has been the focus of scholarly research since the appearance of Alberto Coffa's *The Semantic Tradition from Kant to Carnap*. (1991) By examining the formative views of the later leaders of Logical Empiricism, Coffa argued that their neo-

Kantianism was transformed by the revolutionary scientific developments which marked the early 20th Century. The confluence of these intellectual forces –neo-Kantianism and the radical revision of space-time physics- resulted in the philosophical views which matured into Logical Empiricism. Evidence of Coffa's contention can be readily found in the training and early writings of Rudolf Carnap and Hans Reichenbach.¹ And Coffa regarded Schlick as the intellectual heir of a neo-Kantian tradition originally conceived by Hermann von Helmholtz and fostered by Schlick's mentor, the physicist Max Planck. (1991, p. 171) Michael Friedman has questioned Schlick's fitness for the role of neo-Kantian in the

[☆] I have benefited greatly from the helpful criticisms and generous suggestions of an anonymous referee. I am also deeply indebted a Clemson University CAAH Research Grant for research support. An early version of this paper was presented at the 2014 HOPOS meeting in Ghent, Belgium and I wish to thank those present for their insightful comments and criticisms, especially Thomas E. Uebel (Manchester) and Michael Heidelberger (Tübingen). Finally, I thank Hannah Elgin for assistance with my research.

E-mail address: oberdat@g.clemson.edu.

¹ For instance, Rudolf Carnap studied with Bruno Bauch and Gottlob Frege, both influential thinkers of the Southwest School. (Friedman, 2000, pp. 63–4) Hans Reichenbach studied with Ernst Cassirer before completing his dissertation in Erlangen. (Glymour and Eberhardt, 2012).

tradition of Helmholtz, arguing that much valuable insight was lost in the transformation of 19th Century neo-Kantian thought into Logical Empiricism.² In “Helmholtz’ *Zeichentheorie* and Schlick’s *Allgemeine Erkenntnislehre*,” Friedman contrasted the views of Hermann von Helmholtz, *doyen* of late 19th Century physics and advocate of the *zurück zu Kant* movement, with Schlick’s epistemology. As developed in his monumental *General Theory of Knowledge*, Schlick’s epistemology could well be regarded as a systematic attempt to extend Helmholtz’ signature doctrine, the so-called ‘sign-theory’ of perception, to the entire theory of knowledge. But Friedman argued that, as the sign-theory migrated from the context of Helmholtz’ thought to Schlick’s early epistemology, it was transformed from “a modified version of the Kantian conception of space as a subjective form of intuition” into an empiricist version of the causal theory of perception. (1997, p. 38)³ And this difference, Friedman argues, is due primarily to radical divergences in the understanding of spatial intuition and its relations to space in the philosophical thought of Helmholtz and Schlick. Instead of recognizing the source of spatial concepts in intuition, like Helmholtz, Schlick treats spatial concepts as implicitly defined by a Hilbertian axiomatic system, conceived independently of intuition until coordinated with their applications. (Friedman, 1997, p. 38) Friedman appreciates Schlick’s perceptive understanding of recent scientific developments, especially the philosophical implications of the axiomatic foundations of geometry explored by Moritz Pasch and David Hilbert, as well as Einstein’s application of non-Euclidean geometries to physical space. (1997, p. 28) Yet Schlick embraced the deep separation of concepts and intuitions common at the time, which impedes any effort –like Helmholtz’– to ground objective physical reality in the subjective space of intuition. Friedman thinks that this commitment impedes Schlick’s grasp of the sign-theory as Helmholtz originally conceived it, in turn causing him to misunderstand Helmholtz’ views on geometry, failing to appreciate the significance of Helmholtz’ grounding of geometric empiricism in his analysis of spatial intuition.

In what follows below it will be argued that what Friedman regards as Schlick’s misunderstanding is, rather, a decisive attempt to expand upon Helmholtz’ more valuable philosophical insights, independently of his neo-Kantianism. Specifically, Schlick extended Helmholtz’ sign-theory in order to develop an epistemology incorporating philosophical ideas drawn from leading scientific figures, notably his teacher Max Planck, the French mathematician Henri Poincaré, and Einstein. Planck developed a structuralist epistemology by generalizing Helmholtz’ sign-theory and then deploying it in his critical polemic against the anti-realism of Ernst Mach. And one of the pillars of Schlick’s early thought was a variety of conventionalism which he adapted from Henri Poincaré’s arguments against geometric empiricism. Finally, there was Schlick’s ‘method of coincidences’ which links objective scientific concepts with sensory experience. And while the resulting theory of scientific knowledge relied on ideas from Planck, Poincaré, and Einstein, it is incontestably Schlick’s own creative product. Thus, the scientific epistemology developed in Schlick’s *General Theory of*

Knowledge differed profoundly from Helmholtz’ neo-Kantianism, which had been rendered obsolete by recent developments.

The discussion which follows begins with Helmholtz’ classic essay on “The Facts in Perception”. In this work, Helmholtz’ presentation of the sign-theory reveals a deep, underlying Kantianism which explains the bearing of issues in perception on the foundations of geometry. And in the centenary collection of Helmholtz’ epistemological writings edited by Schlick and the physicist Paul Hertz in 1921, Schlick emphasized his agreement with Helmholtz’ view, as well as the importance of Helmholtz’ insights for his own epistemological thought. In the subsequent section, focus is directed on Schlick’s presentation of the sign-theory, in which he describes it as more than just a theory of perception, but ‘the essence of all knowledge’, implying that the sign-theory provides the basis for a comprehensive epistemology. (Hertz and Schlick, 1977, p. 166 fn. 15) The generalization of the sign-theory into the view that all cognition consists of structural representations of what is known, is an idea borrowed from Planck’s epistemological writings, especially his celebrated essay on “The Unity of the Physical World-Picture”. The result is an epistemological structuralism joined with Planck’s own strident realism which, in turn, formed the core of Schlick’s epistemology. (Schlick, 1924) In Section 4, the discussion turns to the transcendental foundations of Helmholtz’ geometric empiricism and the challenge it faced from the conventionalist arguments of Poincaré. In his comments on “The Facts in Perception,” Schlick concurred with Poincaré’s critique, thus fitting the latter’s conventionalism to the structural realism adopted from Planck. But all this is simply prelude to Friedman’s criticism of Schlick, which concerns the role of the sign-theory in Helmholtz’ effort to ground physical geometry in spatial intuition. According to Friedman, Schlick simply cannot conceive of any relation between physical geometry and intuition because it violates Schlick’s fundamental distinction between concepts and intuitions. But Friedman’s contention neglects a key feature of Schlick’s epistemology. While the gulf separating conceptual knowledge and intuitive acquaintance is a basic feature of Schlick’s epistemology, one of the most impressive accomplishments of his philosophical thought is his method of coincidences, which grounds theoretical constructions in sensory experience. The result is nothing less than an account of empirical, scientific knowledge as the objective conceptualization of subjective intuition. Then Schlick’s treatment of Helmholtz is not a misunderstanding of the latter’s analysis of spatial intuition at all, but a decisive rejection of his Kantianism. And this, in turn, undermines any effort to locate Schlick in the neo-Kantian tradition of Helmholtz and Planck – as Coffa, Friedman, and others have tried to do.⁴

2. The sign-theory

The fundamental idea of Helmholtz’ sign-theory was that perceptions are signs or place-holders for their sources, but do not resemble or copy them in any way. As Friedman has pointed out, Helmholtz assumed, in his essay on “*Das Sehen des Menschen*” of

² Friedman’s efforts may be regarded as an extension of Coffa’s pioneering work, especially the idea that the secret to understanding our philosophical forebears is to grasp the pressing scientific issues, as well as the philosophical matters, of their day. In other words, to understand the history of philosophy is to understand the contemporaneous history of science as well. And those who share Friedman’s approach call this marriage of the history and philosophy of science, ‘Synthetic History’. (Friedman, 2010, pp. 573–4) The result has been a plethora of efforts illuminating the interaction of philosophical and scientific advances which transformed the Nineteenth Century into the Twentieth.

³ Friedman maintains essentially the same view in (2010), (pp. 628–637).

⁴ Coffa places this tradition in the context of late 19th Century German neo-Kantianism in (1991, pp. 171–2) Yet Coffa does not agree that the innovations which Schlick introduced –conventionalism and realism– mark the decisive turning-point away from the neo-Kantian fold and onto an original path of his own. Both Michael Heidelberger and Matthias Neuber have likened Schlick’s early epistemology to the ‘Critical Realism’ of Alois Riehl. But see fn. 12 below. (Heidelberger, 2007; Neuber, 2012).

Download English Version:

<https://daneshyari.com/en/article/1160304>

Download Persian Version:

<https://daneshyari.com/article/1160304>

[Daneshyari.com](https://daneshyari.com)