

## Reviews

**Matthias Neuber (Ed.). *Fiktion und Fiktionalismus: Beiträge zu Hans Vaihingers ‚Philosophie des Als Ob‘*. 283 pp., Würzburg: Verlag Königshausen & Neumann GmbH, 2014.**

Björn Henning  
University of Vienna  
Vienna, Austria

In 1911, German philosopher Hans Vaihinger (1852–1933), a student of such notable nineteenth century philosophers as Christoph Sigwart and Eduard Zeller, published his main monograph *Die Philosophie des Als Ob* (*The Philosophy of ‘As if’*, translated into English in 1924). In it, he seeks to answer the question how it is “that we arrive at the truth through knowingly wrong ideas.” Vaihinger’s book stands in the tradition of Kant’s and Nietzsche’s philosophy, and supports a scientific antirealism. More specifically, it can be seen as an early version of ‘fictionalism’, a position that has recently been discussed by e.g. Arthur Fine, Mark Kalderon, and Matti Eklund. On 800 pages Vaihinger tries to develop a “system of the theoretical, practical and religious fictions of mankind”, arguing for a position he dubs “positivist idealism” or “idealistic positivism”. His magnum opus was released in ten editions within no more than 16 years, which suggests a lively discussion of his philosophy in the German-speaking world at that time. Yet in the history of philosophy, Vaihinger is probably better known as the founder and editor of the famous *Kant-Studien* as well as the founder of the *Kant-Gesellschaft*, and as co-editor of *Annalen der Philosophie*, a journal subsequently taken over by Rudolf Carnap and Hans Reichenbach, and renamed as *Erkenntnis*, the publication organ of the Vienna Circle and the Berlin School of logical empiricism.

One hundred years after the date of its first publication a conference on Vaihinger’s *Philosophy of ‘As if’* was organized by the Forum Scientiarum. The Forum Scientiarum is an institution of the University of Tuebingen promoting the dialogue

between the sciences and the humanities. The proceedings of that conference have now been published, edited by Matthias Neuber who also provides a helpful introduction. In it he singles out the interdisciplinary approach as an advantage of Vaihinger's 'fictionalism'. The volume contains a welcome collection of sixteen papers. The authors jointly attempt to contribute to a historical-critical reconstruction of Vaihinger's 'philosophy of fictions' to assess the tenability of its central claims, and to explore ways of applying it to a variety of scientific disciplines such as mathematics, logic, physics, the cognitive sciences, literary studies, ethics, and the philosophy of religion.

The book is thematically divided into three parts: (1) Foundations; (2) Fictionalism in Logic, Mathematics, and Physics; (3) Fictionalism in the Humanities.

The *first part* contains an informative biographical survey of Vaihinger's life by Gerd Simon as well as two insightful analyses of the history of ideas and problems of the *Philosophy of 'As if'* conducted by Michael Heidelberger and Gottfried Gabriel. Heidelberger's study includes a thorough investigation of the influence of Friedrich Albert Lange's *History of Materialism* on Vaihinger's 'as if philosophy' revealing it as a successor to Lange's philosophy. In the last section of his article he sketches a historical trajectory originating from Vaihinger's fictions leading to early Wittgenstein's 'pseudo-sentences'. Gabriel initially discusses the impact of Nietzsche on Vaihinger before arguing, following Vaihinger's distinction between (scientific) 'fictions' and (mythological, aesthetic) 'figments', against attempts of invalidating the fact-fiction distinction of postmodern and poststructuralist proponents such as Hayden White.

In *part two* the authors address the adequacy of Vaihinger's 'fictionalism' for the 'exact sciences' and discuss whether it is a useful tool for describing and illuminating these disciplines. Generally, their verdicts are not too positive about the tenability of Vaihinger's concept of fiction in the sciences. Following Christian Betsch's distinguished study on Vaihinger's 'as if philosophy' from 1926, Volker Peckhaus analyses the usefulness of Vaihinger's fictions for modern mathematical and formal logic. He arrives at the conclusion that the 'philosophy of as if' is completely inadequate. Although logicians and mathematicians actually make good use of 'fictions', e.g. in terms of mathematical axioms, Vaihinger's claim that we knowingly operate with contradictory concepts and propositions is untenable. Torsten Wilholt and mathematician Ulrich Felgner generally agree in their papers with Peckhaus's critical assessment. Wilholt attempts different interpretations of Vaihinger's 'fictionalism' before analyzing the systematic potential of 'fictionalism' as a philosophy of mathematics. In his analysis he not only addresses Vaihinger but also contemporary proponents of mathematical fictionalism such as Hartry Field and Stephen Yablo. Although Wilholt admits that 'fictionalism' is quite appealing as a philosophy of mathematics, he indicates severe systematic problems mathematical fictionalism still has to face. Using mathematical examples, e.g. the concept of infinity as well as the concepts of negative, irrational, infinitesimal, and imaginary numbers, Felgner, too, investigates the applicability of (Vaihinger's) fictions to mathematics. In his contribution, Klaus Hentschel draws on his much-noticed dissertation on the philosophical interpretations of relativity theory in the early twenti-

eth century. In particular, he deals with the reception of Vaihinger's philosophy amongst physicists of relativity and quantum mechanics. According to Hentschel, physicists pursued two strategies: either they did not take the 'philosophy of as if' all too seriously, like Einstein did for good reason, or, in the case of Schrödinger's assessment of the Copenhagen interpretation, they used it for the purpose of ridiculing theories they considered unsatisfactory. Vaihinger thought of mathematics as being the main field of application for his 'fictionalism'. At his suggestion the Viennese Academy of Sciences offered an award for the best essay on the topic 'fictions in mathematics' in 1923. Mathematician Christian Betsch won the award. In his paper Betsch's son, Gerhard Betsch, addresses the biographical and historical context of the prize essay *Fiktionen in der Mathematik*, published in 1926.

In their joint paper – the first article of the *third and final part* of the book – the authors Sabine Döring and Bahadır Eker relate Vaihinger's 'fictionalism' to contemporary (meta)ethical debates (John L. Mackie, Richard Joyce, Mark Kalderon). The challenge both authors had to accept was the vagueness and incompleteness of an ethical position in the *Philosophy of 'As if'*. Despite this obstacle, the authors manage to characterize Vaihinger as an "antirealist", "error theorist", and understand his fictions as a precursor of what in nowadays is called 'revolutionary fictionalism'. Subsequently, Harald Maurer discusses the applicability of Vaihinger's concept of fiction to the cognitive sciences and neuro-informatics. In particular, he proposes that connectionist models, based on David E. Rumelhart and James L. McClelland's ideas, have attributes of Vaihinger's fictions. Focusing on pragmatic aspects of Vaihinger's philosophy, Georg Barthimäus Koridze investigates Vaihinger's 'fictionalism' with respect to the philosophy of religion. He contrasts Vaihinger's ideas with William James's philosophy of religion suggesting that similarities in their accounts can be explained in terms of their shared Kantian heritage. However, he also points out differences regarding the truth value of religio-philosophical propositions. The paper that concludes this anthology is Jürgen Wertheimer's essay. Wertheimer provides a sketch of how the theme of fiction figures in German literature, roughly, in the last two centuries, e.g. H. von Kleist, Fr. Schiller, and Fr. Dürrenmatt.

In comparing the results of part two and three of this book, it seems that Vaihinger's 'fictionalism' is a better fit for the humanities than the 'exact sciences'. The authors do not elaborate on this particular result in the printed version. A desideratum for possible future studies on Vaihinger is the investigation of the relation between his activity as founder and editor of highly influential philosophical institutions or journals, and his influence and reputation within the philosophical community in the German-speaking world. As Gerd Simon points out in his article, the publication of ten editions of the *Philosophy of 'As if'* within less than two decades suggests that Vaihinger wrote indeed a philosophical 'bestseller'. An investigation focusing on Vaihinger and his socio-historical context might shed more light on this phenomenon. One might suspect that it was not only the originality of Vaihinger's philosophical ideas but also his talents as an influential organizer and coordinator of philosophical institutions that explains his apparent reputation among philosophers. Furthermore, it remains doubtful whether it is accurate to characterize Vaihinger's

‘as if philosophy’ as a “plea for interdisciplinarity” – apparently meant in the sense of “multiple applicability” –, as suggested not only in the introduction of the book. After all, most of the authors conclude that attempts to apply Vaihinger’s ‘fictionalist program’ to selected scientific disciplines are at least problematic. Based on the general conclusions drawn by the various authors one is inclined to say that in terms of how useful it is as a philosophy of science, Vaihinger’s ‘fictionalism’ provides a completely inadequate rather than a satisfactory account. Applied to the sciences, it seems to create more problems than it solves.

Some of the articles of this book appear, at times, less coherent. Of course, that is to be expected with regard to the general form of conference proceedings. Wertheimer’s, rather unorthodox, essay in the last part of the book appears to be somewhat detached from Vaihinger’s ‘as if philosophy’. While philosophically instructive and inspiring, the comparison between Vaihinger and Wittgenstein in the first part of the book seems historically somewhat vague. A few more historical documents and references would have helped to illuminate the intellectual relationship between both philosophers. In spite of these minor remarks, the conference proceedings provide a long-awaited, excellent study, rich in content and detail, on Vaihinger and his ‘fictionalism’ that will be a welcome contribution to the HOPOS and HPS community. Besides a detailed introduction to his biography and his ‘as if philosophy’, its origins and philosophical mentors, this collection is philosophically revealing with respect to the applicability and suitability of Vaihinger’s ‘fictionalism’ for selected contemporary scientific disciplines.

**Siegetsleitner, Anne (2014) *Ethik und Moral im Wiener Kreis – Zur Geschichte eines engagierten Humanismus*.  
Wien: Böhlau.**

Uwe Czaniera  
Department of Philosophy  
University of Bayreuth  
D-95440, Bayreuth, Germany

As analytic philosophy is growing older, the field of history of analytic philosophy is growing larger. Now Anne Siegetsleitner from the University of Innsbruck has published a 400 pages volume on morals and ethics in the Vienna Circle: *Ethik und Moral im Wiener Kreis – Zur Geschichte eines engagierten Humanismus*. This book is not meant to discuss or to criticize the ethical contributions of the Circle members (at least not in very much detail), but to give a precise exposition of the development and the contents of their approaches to ethics.

The general aim of the book is to refute two allegedly predominant views concerning morals and ethics in the Vienna Circle: 1. The members of the Vienna Circle, as citizens, have not been very interested in questions of morals. 2. The members of the Vienna Circle, as philosophers, have not been very interested in questions of ethics. The second view is illustrated by the assumption that many people tend to take the positions of Rudolf Carnap in *Überwindung der Metaphysik durch logische Analyse der Sprache* and Alfred Jules Ayer in *Language, Truth, and Logic* as representative views of Vienna Circle ethics: The propositions of ethics are not verifiable, hence they are meaningless, and that is all moral philosophy has to say.

Myself being a disciple of Rainer Hegselmann, I never believed in either of the “predominant views”. Nevertheless, many people certainly do, and in any case it is extremely helpful to have a volume that assembles the ethical positions brought forward in the Vienna Circle. It shows clearly that besides noncognitivism we get positions covering the whole range of ethics – deontic logic, consequentialism, deontologism, virtue ethics and even normative ethics.

After some enlightening remarks concerning the somewhat strange reception the Vienna Circle received in the Frankfurt School, and a section highlighting the cultural environment of the Vienna Circle and the political as well as the educational and moral activities of its members (thereby refuting view 1), the reader is introduced to the ethical views of a first protagonist of the Circle, Rudolf Carnap. After introducing his intellectual and ethical development, Siegetsleitner focuses on the successive core writings of Carnap in which he touches on questions of moral philosophy and metaethics. The positions receive a detailed reconstruction and the reader is also informed about their reception and various influencing sources. Furthermore, some attention is devoted to the question whether the denial of epistemically accessible objective values may lead to a destruction of morals in “real life”.

In a personally adjusted manner, Siegetsleitner proceeds to other members of the Vienna Circle – Karl Menger and his logic of norms, Otto Neurath and his brand of scientifically informed socialism free from metaphysics, Philipp Frank and his kind of moral pragmatism, Moritz Schlick whom we may ascribe; I think, a certain form of consequentialist virtue ethics, Viktor Kraft who proposed the most cognitivist form of ethics held in the Vienna Circle, and, in the end, Herbert Feigl and his own kind of moral pragmatism.

The obvious strength of this book lies in its comprehensiveness. If someone wants to know what the members of the Vienna Circle had to say about ethics and does not have the time to consult the single publications, here is the volume that presents the relevant positions at one blow.

On the other hand, in some respects I found the book rather weak:

1. To question whether practical morality has been of any interest to the members of the Vienna Circle as citizens seems artificial. The smallest possible acquaintance with the Circle protagonists should suffice to see the inadequacy of this view. The author also suggests that there is a tension between being a metaethical noncognitivist and being a morally committed citizen. But she would have had to argue for there being such a tension. At first glance, I do not see it. Moreover, it seems at least an exaggeration to say that analytic philosophy nowadays marginalizes ethics. The quoted enumeration of talk sections on the “German Society for Analytic Philosophy” conferences (p. 65) certainly does not mirror the assumed respectability of the topics. It was Georg Meggle who organized the first GAP conferences, and it would be ridiculous to suggest that he would regard ethics as a marginal field of analytic philosophy.
2. Even if the expositions of the several positions are adequate, sometimes the reconstruction of influencing sources does not seem convincing. This holds especially for the Carnap section. I do not see the fruitfulness in linking, for example, the *Logischer Aufbau der Welt* and the *Scheinprobleme in der Philosophie* to Lebensphilosophie, Neo-Kantianism, Rickert or Nietzsche. The common logical-empiricist interpretation of these works as an attempt to carry out Wittgenstein’s *Tractatus* philosophy still seems to me much more coherent and interesting, and it would have been more fruitful to evaluate them in this respect in more detail. Another example: At the end of his *Überwindung der Metaphysik durch logische Analyse der Sprache*, Carnap praises Nietzsche for using the form of poetry, not theory, when it comes to express ethical convictions. The usual understanding of this remark has it that Carnap urges us to reserve the form of theory for the discussion of cognitively significant topics. Siegetsleitner, however, says that “Carnap has returned to Lebensphilosophie” (p. 132) – this is a much more ambitious claim, and one would have to argue for it.
3. Of course, a historically orientated volume cannot spend too much pages on a systematic evaluation of the contributions it presents. Consequently, Siegetsleitner usually renounces such evaluations. It is only in the Carnap section that we get some critical remarks. But if you come up with criticism, you should argue carefully. Here, criticism always seems a bit superficial. On pages 142/3, for exam-

ple, we hear that a “collective decisionism” (the position Siegetsleitner subscribes to) offers other and better answers to the ethical questions Carnap addresses. But we neither get a substantial argument for collective decisionism nor an argument showing why Carnap is wrong. P. 159 provides another example of superficiality when the author recurs on the idea that being a good knife implies being a sharp knife – she simply overlooks the distinction between functional terms (like “knife”) and non-functional terms (like “sunset” or “man”) (see Hare 1957).

4. There would have been space for some substantial criticism because some sections (especially the one about Victor Kraft) suffer from too much repetition. I had the impression that a bit more of systematization in the expositions could have freed much space for evaluation without rendering the expositions less informative.
5. In the same way, I miss more hints concerning the argumentation-based critical reception of Vienna Circle’s metaethics. Richard Hare, for example, provided a substantial critique of emotivism in his *Language of Morals* – why do we not hear anything about that? And it would also be interesting to hear something about whether Moritz Schlick’s understanding of evolution could still pass the test.

To sum up, I think that Siegetsleitner’s *Ethik und Moral im Wiener Kreis* is extremely valuable to get an overview over the variety of ethical positions held in the Vienna Circle. However, when it comes to evaluate these positions, it only delivers a starting point.

## Reference

- Hare, R.M. 1957. Geach: Good and evil. In *Theories of ethics*, ed. P. Foot. Oxford: Oxford University Press.

**Siobhan Chapman, *Susan Stebbing and the Language of Common Sense*, Palgrave Macmillan 2013.**

Dejan Makovec  
University of Vienna  
Vienna, Austria

Here is one hand, and here is a history of analytic ideas. At the turn of the century British idealism was full-blown and so were idiosyncratic turns of phrase about the Absolute. A new tradition parted ways by emphasizing common sense and pioneering symbolic logic in philosophy, which later entered the common sense of a wider intellectual public. With her intellectual biography of Susan Stebbing, who figured centrally in this philosophical transition, Siobhan Chapman documents the history behind analytic ideas and provides the reader with a number of missing links in the history of the academic discipline and with anecdotes worth knowing about it.

I admit, I have heard the name Susan Stebbing before I read this book. Hearing this name probably comes with learning one of the following details. Stebbing is the author of *Thinking to Some Purpose*; she was a philosophical adherent of Moore; she was the first female professor of philosophy in Britain. – Details, that will find their place in the background of the rich philosophical career Chapman describes. The chapters of the book follow Stebbing's life chronologically and I will keep this order for their brief summary:

1. *The Analyst in Training*: Stebbing started her academic training in History at Cambridge. The first chapter sets the scene with G.E. Moore's withdrawal from F. H. Bradley's and John McTaggart's philosophical influence. Moore made his appearance by trading the idealist framework for common sense and emphasizing the analysis of empirical statements themselves over their provability. Before Stebbing met Moore, she encountered philosophy with Bradley's *Appearance and Reality*.
2. *Becoming a Philosopher*: As Cambridge by that time did not allow women to earn an academic degree, Stebbing pursued her graduation at King's College London. There she wrote her master thesis about Henri Bergson's voluntarism and American pragmatism. In it she argues that these philosophical movements are incompatible, ultimately rejecting both for their failure to provide a sensible theory of truth. While Bergson's intuitive truth cannot be communicated, by deeming all useful statements false, the pragmatist's identification of truth and usefulness fails to discern falsehood. In 1917 Stebbing read a paper to the Aristotelian Society. Moore was in the audience and challenged the very meaning of her statements in a passionate manner. A second talk to the society the following year prompted an in-depth correspondence of letters between Stebbing and Moore which was to establish a lasting friendship. This second chapter follows Stebbing's difficult way to a full-time academic position, through her brief occupation as a school teacher, her activity for the League of Nations Union, and the beginnings of her lifelong career as an outspoken and challenging reviewer.

3. Science, Logic and Language: For the decade of the 1920s Stebbing closely followed and reviewed Alfred North Whitehead's philosophy of science from enthusiasm since *Principia Mathematica* to disappointment about his theological turn in *Process and Reality*. Rather than taking a stance herself and pursuing some form of reductionism, she consistently scrutinized the expressions of her contemporaries, treating physics, philosophy and common sense as equals with different purposes in our understanding of the world around us. In 1930 Stebbing published *A Modern Introduction to Logic*. As an introductory textbook for first-year students it stood out by including the new mathematical logic as it was developed by Gottlob Frege and implemented by Whitehead and Bertrand Russell. As a textbook on logic it still stands out by starting with a chapter on Reflective Thinking in Ordinary Life and including examples from everyday life to politics such as the weight of a box of chocolates, house prices and capital punishment. With this first mature book she already established her long term influence on philosophy and philosophical education in Britain.
4. Cambridge Analysis: The fourth chapter covers Stebbing's most immediate interference with an ongoing philosophical debate. The context of her genuine contribution is logical atomism as it was pursued in the school called Cambridge analysis founded by Russell and Ludwig Wittgenstein. In her textbook and in a series of papers she positioned herself by criticizing Russell for his failure to distinguish the analytic definition of a symbol from the analysis of a concept. By what she called "directional analysis" of concepts we do acquire new knowledge about the facts our expressions are supposed to signify. Thus the result of clarifying our expressions is not merely an analytic readjustment of our symbols. Chapman provides a rich description of the time where the very means and purpose of analytic philosophy was to be defined. Here Stebbing figured prominently as a critic of Russell and it led to her cooperation in the editing of the first issue of *Analysis*. In 1933 a chair in psychology was officially reassigned to keep Stebbing at Bedford College and finally make her a professor of philosophy.
5. Logical Positivism and Philosophy of Language: In 1933 Stebbing was selected as President of the Aristotelian society and she delivered the annual British Academy philosophy lecture. She chose logical positivism as its topic. While this philosophical movement was established on the continent by that time, it was less known in Britain. Stebbing met Moritz Schlick 3 years earlier and followed the publications of the Vienna Circle closely. Logical positivism was in many ways close to Cambridge analysis and Stebbing similarly criticized it for restricting philosophical analysis to language alone. But she also took issue with the Vienna Circle's epistemic and semantic emphasis of first personal reports and verification, claiming it leads them to methodological solipsism. She insisted that the purpose of analysis is to clarify existing beliefs, not to justify them, and that the logical positivists should have read Moore more closely. Her criticism notwithstanding, Stebbing played a central role in the introduction of logical positivism to the English-speaking world. She invited Rudolf Carnap to give a lecture at Bedford College in 1934 and Karl Popper in the year after. In 1935 she participated on the first Organization Committee of the International Congress

for the Unity of Science that took place in Paris, where she also met Otto Neurath and Philipp Frank of the Vienna Circle.

6. **A Wider Audience:** In addition to her teaching load and running a department Stebbing became a public intellectual in the 1930s. Chapman's sixth chapter looks at two popular books Stebbing published in this period: *Logic in Practice*, 1934, is a guide to the semantic flaws of socio-political discourses, such as the General Strike in 1926. Written for the ordinary reader, it was nevertheless praised by the small academic audience it reached. It was followed by *Philosophy and the Physicists* in 1937, in which Stebbing puts the analytic screws on the idealist or mystical styles of her contemporary popular scientists. These were Sir James Jeans' *The Mysterious Universe* from 1930 and Sir Arthur Eddington's *The Nature of the Physical World* published in 1935. Eddington proves to have a persuasive and playful way to integrate the scientific account of an everyday object into a trivial scene from everyday life. This is fine for the purpose of displaying the difference between physics and common sense. But as soon as he draws conclusions from such playful descriptions in order to integrate religious beliefs into the scientific world, Stebbing contrasts his almost subatomic living room with a just as persuasive commonsensical description that does away with the need for mystery.
7. **Politics and Critical Thinking:** A sober critique that intends to pay close attention to the words of public discourse and political figures is the overwhelming task that Stebbing approached in her 1939 *Thinking to Some Purpose*. Her best known book she wrote at a time of personal loss, of failing health and of competing ideologies in a society on the brink of war. Chapman offers a feel for the circumstances by consulting personal letters, as she does throughout the book. A reconstruction of political and intellectual debates surrounding *Thinking to Some Purpose* completes this chapter on a book by Stebbing that is still referred to in the twenty-first century.
8. **Logic and Ideals:** With the start of the war and the evacuation of Bedford College to Cambridge, Stebbing came to live once again where she would have been denied an academic career. Cambridge had changed in the meantime, but not for the better in Stebbing's opinion. Not least because of mutual disdain with Wittgenstein, who even opposed her being invited to give a lecture in 1939. Her next book, *Ideals and Illusions*, 1941, comes across more like a due political intervention than a sober guide to intellectual freedom the way Chapman presents it. Stebbing authored it somewhat on demand being addressed as a public intellectual in these times. Although she was not very satisfied with the result herself, *Ideals and Illusions* found an appreciative audience. She also helped refugees from Nazi-occupied countries. In 1941, with a supporting letter by Albert Einstein, she got Neurath out of British imprisonment. At Oxford Neurath made himself director of his reestablished ISOTYPE Institute and Stebbing its president.

After being diagnosed with cancer in 1942, the illness that should end her life in the following year, she spent a period of recovery entertaining multiple book projects. But on request she wrote her final *A Modern Elementary Logic*, 1943, an intro-

duction for students of philosophy at British universities and in the field abroad. This time unburdened with ancient logic and the analysis of current political ramblings it should prove her lasting influence as a teacher of philosophy in a number of reprints. (9) Stebbing, *Philosophy and Linguistics: A Modern Introduction to Logic* was to be considered Stebbing's most remarkable contribution by her contemporaries. In the final chapter Chapman traces Stebbing's academic way up to Gilbert Ryle, J. L. Austin and thereby the beginnings of ordinary language philosophy. She ends the book with an excursion into critical discourse analysis and suggests Stebbing as a plausible ancestor to this later discipline.

By way of these summaries I cannot communicate my most striking reading experience. This was a personality named Susan Stebbing coming to life somewhere over chapters (5) and (6). The anecdotes and letters cited by Chapman gave me a vivid impression as if I was watching the professor in her various academic and public interactions. Of course, this is an intellectual biography in chronological order, but all the more I think it worth mentioning that it was fun to read, although the story has its darker moments as well. Chapman succeeds in displaying the pragmatics of Stebbing's work, excerpts from which I will keep sharing with colleagues.

**EINO KAILA, *Human Knowledge: A Classic Statement of Logical Empiricism*. Translated by Anssi Korhonen; edited by Juha Manninen, Ilkka Niiniluoto, and George A. Reisch. Chicago, Illinois: Open Court, 2014, pp. xxvii + 217**

Matthias Neuber  
Tübingen, Germany

Eino Kaila (1890–1958) is one of the less well-known figures within the logical empiricist movement. Although there has been some research on his philosophical work in recent years, Kaila's contribution to the logical empiricist project is still in need of closer examination. The present volume should prove as an excellent basis in this respect. In fact, Kaila's *Inhimillinen tieto* is a classic of early/mid twentieth-century philosophy of science. It is therefore all the more important that the book is now available in the translation by Anssi Korhonen.

The volume comprises ten chapters and an introduction by the editors Juha Manninen and Ilkka Niiniluoto. As the editors point out in their introduction, Kaila conceived of his book (published in the Finnish original in 1939) both as a textbook of scientific philosophy for laymen and as a systematic introduction to logical empiricism for professionals. Rudolf Carnap, with whom Kaila stood in close contact, welcomed Kaila's contribution especially for its paying attention to the "historical connections," since these, as Carnap admitted, were "mostly ignored" in the existing publications by the logical empiricists. Furthermore, Carnap suggested to publish the book in English translation for the *Library of Unified Science* which in turn was published, in the Dutch exile, by Otto Neurath. However, nothing came of Carnap's suggestion because Holland was soon occupied by German troops, Neurath had to flee to England, and Finland went to war against the Soviet Union in the summer of 1941. But how came it that Kaila had such splendid connections to the members of the Vienna Circle? Here, it must be seen that academic philosophy in Finland had for a long time been dominated by Hegelian idealism which, according to the editors, was represented by the "national philosopher" Johan Vilhelm Snellman (1806–1881). Kaila, even in his early years, was not at all attracted by idealism. Rather, he engaged in the philosophy of science, focusing on Machian positivism and its rejection of atomism. Kaila himself defended the reality of atoms and argued for their being part of a "mind-independent causal nexus." In 1926, he published his monograph *Die Prinzipien der Wahrscheinlichkeitslogik*, where he critically discussed both the views of probability of Edgar Zilsel and Hans Reichenbach. Herbert Feigl, in his 1927 dissertation *Zufall und Gesetz* (which was supervised by Moritz Schlick), critically evaluated Kaila's monograph. In 1929, Kaila (on invitation by Schlick) decided to visit Vienna in order to participate at some of the Vienna Circle's meetings. In the Circle's 1929 manifesto "Wissenschaftliche Weltauffassung – Der Wiener Kreis," Kaila was mentioned as one of the thinkers close to the "scientific world-conception" of the Circle. This had to do in the first place with Kaila's methodological orientation which implied that

there is no sharp difference between philosophy and special scientific disciplines and that philosophy itself should proceed by making use of exact methods. However, as concerns questions of systematic outlook, Kaila, like Reichenbach, defended some sort of probabilistic realism, particularly against Carnap's declaration that the realism controversy is meaningless.

This brings us to the book's ten chapters which are tied together by one red thread, namely (the unifying idea of) *invariance*. More precisely, the book is subdivided in three parts. Part One deals with the problem of theory formation, Part Two with the formal truth of theories, and Part Three with the empirical truth of theories. Invariance plays an essential role in all three parts. However, it is especially Part One where Kaila develops his invariantist approach to science and scientific theory construction. As he declares in the preface, for him "the logical empiricist conception of knowledge is the culmination of two and a half millennia of development in human ideas" (xxvi). Yet, it must be seen that Kaila, by invoking invariance, contributed an own and very specific version of the logical empiricist conception of knowledge. Heavily inspired by Ernst Cassirer's *Substanzbegriff und Funktionsbegriff* (1910), Kaila characterized the aim of science as the "search for invariances" (3). By 'invariance' he meant something like regularity, or lawfulness; but he also meant by it the stability, or constancy, of physical entities like energy. On the whole, it is invariances which, according to Kaila, are the object of both scientific and prescientific knowledge. Or, as he puts it at the beginning of chapter 1: "As the invariances that we discover are more general, the more we succeed in satisfying our pursuit of knowledge." (ibid.) Thus there is a hierarchy of invariant systems ranging from everyday perceptual objects to the most stable and lawful objects of science. The outstanding characteristic of the objects of science is that they are *idealized*. According to Kaila, in science "we *round off* everything in thought" (10), that is, we "*rationalize* our concepts – for instance the concept of acceleration – to give them that exactness, precision, and simplicity that is not possessed by the corresponding phenomena of experience" (ibid.). Nevertheless, the search for invariances leads, according to Kaila, to substantive knowledge. Although it is not perceptual qualities which are grasped by scientific knowledge, we are in position to acquire knowledge of certain *structural features* which, in mathematized science, usually have the status of *isomorphisms*. It is for this reason that Kaila thinks that "it is wrong to say that we know *nothing* of things-in-themselves; after all we know their structure" (14).

Chapters 2, 3 and 4 reconstruct the historical development from the Greeks up to Galileo, Newton, and Leibniz. For Kaila, Galileo is the hero of this story. For it was Galileo who brought together the two decisive components of scientific knowledge: the search for invariances, on the one hand, and the requirement of verification, on the other. Whereas Aristotle raised the question 'What?' and accordingly looked for the substance, or essence, of things, Galileo raised the question 'How?' and accordingly looked for functions, or as Kaila alternatively puts it, "*relational invariances*" (51). Questions about essences were completely ignored by Galileo, which in turn, in Kaila's eyes, makes him "one of the forerunners of logical empiricism" (53). However, with Descartes, the empiricist impetus was rudely stopped: "This distinguished mathematician, despite being given the honorific title 'father of modern

philosophy', was far behind Galileo in his conception of knowledge. In Galileo we find a fruitful balance between the search for invariances and the requirement of empirical verifiability. But with Descartes this balance tilts toward Plato and a postulate of invariance. Empirical verifiability, it is suggested, is not necessary in principle, for we are supposed to know the laws of nature in advance." (59) Unlike Galileo, Descartes, by raising the question 'Why,' was looking for 'ultimate causes' and thereby stepping back to Aristotelian essentialism. But then, Kaila rather dramatically declares, the "gigantic figure of Newton" (61) entered the stage. With Newton, the Galilean conception of knowledge got saved, that is, according to Kaila "Newton redirects the course of modern science, rescuing it at a moment when Cartesianism was leading it away from the right path" (61). By rejecting *a priori* speculative hypotheses about the essences of phenomena and their causes, Newton returned to the empirical basis of science. As early as in his *New Theory of Light and Colours* of 1671, Newton refused to answer Aristotelian and Cartesian *what-* or *why-*questions: "Science has no other task than to start from experience and state the exact laws of phenomena that will help other phenomena to be predicted. That famous slogan, 'Hypotheses non fingo,' is already presupposed in this first work." (62) With Leibniz, this whole development reaches its culmination. For, according to Kaila, it was Leibniz who, in terms of his "*principe de l'observabilité*," most forcefully articulated the requirement of empirical verifiability. Thus, like Galileo and Newton, Leibniz – the alleged "radical rationalist" (67) – should be seen as a forerunner of the modern, i. e. logical empiricist, conception of knowledge.

Chapter 5 closes Part One by reflecting on the problem of induction and its relation to the concept of probability. As Kaila briefly indicates, the task of an 'inductive logic' in his view is illusory. For him, the probability that we assign to inductive generalizations is purely psychological. It has to do exclusively with the "way of discovery" (82), whereas logic is restricted to the "way of demonstration" (*ibid.*). Accordingly, an inductive *logic* would be a *contradictio in adiecto*.

Part Two of the book is subdivided in two chapters. Chapter 6 deals with logical truth, chapter 7 with mathematical truth. As concerns logical truth, Kaila gives an instructive and very readable overview over the basic elements of modern first-order logic. He thereby draws on results provided by David Hilbert, Bertrand Russell, Ludwig Wittgenstein, and Alfred Tarski. Furthermore, he addresses Kurt Gödel's work on the so-called decision problem and finally concludes that logical truths are "consequences of definitions" (120) and are therefore to be seen as analytical sentences. Interestingly enough, Kaila in this context anticipates certain ideas by W. V. O. Quine, claiming that "the analyticity and syntheticity of a sentence is a 'relative matter' that depends on how certain concepts have been defined" (116). As concerns *mathematical* truth, Kaila, at the end of chapter 7, introduces what he calls "the first main thesis of logical empiricism" (136). What this thesis says is that the metalogical statements 'Statement L is analytic' and 'Statement L is *a priori*' are equivalent. The so-called second main thesis of logical empiricism says that every statement concerning reality must have real content. This in turn comes very close to what Carnap (in his "Testability and Meaning") called the Principle of Testability. Kaila concludes Part Two by claiming that "Kant's basic question, 'How are synthetic *a*

*priori* statements possible?’ is a mistake because there are no such statements.” (140) On Kaila’s own account only analytic statements are *a priori* and *vice versa*. Synthetic statements, on the other hand, are *a posteriori*, i.e., dependent exclusively on experience.

Part Three, which deals with empirical truth, is focused on such synthetic statements. At its very beginning, in chapter 8, Kaila introduces the so-called third main thesis of logical empiricism, namely the Principle of Translatability which says that every theory (or set of theoretical statements) must be translatable into the language of experience. However, Kaila qualifies this principle by conceding that not every factual statement must be capable of a definitive verification (or falsification). He thereby criticizes the “radical positivist” (147) positions of Ludwig Wittgenstein and (especially) Moritz Schlick who, in his view, required that every factual statement be translatable to statements concerning ‘the given.’ Yet, in the further development of logical empiricism this radical view became liberalized by the weaker requirement of testability. As Kaila further points out, there is no empirical statement which is immune against revision. On the other hand, he goes not so far as to defend some sort of ‘coherence theory of knowledge,’ albeit “some extremists among the logical empiricists” (156), especially Otto Neurath, argued in favor of such a theory. On the whole, it remains somewhat unclear what Kaila’s own position in this context amounts to. The best guess seems to be that he intends to defend some sort of Duhemian ‘holism,’ as regards the relation of theory and experience. At any rate, Kaila explicitly states that “[w]e must [...] give the principle of testability a broad interpretation, so that a theory in its entirety can be regarded as ‘one sentence’” (170). Furthermore, Kaila rejects all forms of metaphysics, understanding by ‘metaphysical’ a sentence which is intended as a factual sentence but does not have any experiential consequences. He directly criticizes Heidegger’s “essentialism” and “existentialism” and banishes it (in an overtly Carnapian manner) from the area of philosophy as “something like a lyrical outburst” (173). Chapter 9 deals with the “logic of physical theories.” It contains an interesting interpretation – and justification – of “micro-physical” theories. In Kaila’s view, “a sentence of a physical theory cannot be ruled out as ‘metaphysics’ solely on the grounds that it fails to depict any specific phenomenon of experience” (195). Rather, “[f]rom a logical point of view, there is nothing wrong with developing a micro-physical theory as far beyond the ‘threshold of observation’ as one may wish, in which case the theory will of necessity contain many sentences that cannot be tested in experience, as long as they are considered in themselves” (ibid.). Again, Duhemian holism, drives Kaila’s argumentation, thus anticipating Quine anew. The concluding Chapter 10 is devoted to what Kaila calls “logical behaviorism.” By ‘logical behaviorism’ he means the articulation of the following, so-called fourth main thesis of logical empiricism: Sentences about a subject’s immediate experience are equivalent to certain sentences about the states in the subject’s body. Simply put, Kaila in this connection recapitulates Carnap’s conception of the notorious mind-body problem. His position seems to be that of a ‘moderate physicalist.’ However, how the questions pertaining to the mind-body problem are to be answered is, according to Kaila, “for future experience to decide” (205).

Given the increasing interest in Kaila's variant of logical empiricism, the present volume is a valuable source for scholars interested in the history of philosophy of science. Moreover, *Human Knowledge* deserves to be recommended to those who want to get a systematic overview over the principal tenets, claims and arguments of the logical empiricist project.

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