

Two halves of unity

John Symons, Olga Pombo, Juan Manuel Torres (eds): *Otto Neurath and the unity of science*. Dordrecht: Springer, 2011, viii+264pp, €106.95 HB

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This book contains eighteen essays (including an introduction by the editors) on the topic of the title. It is divided into two parts. The first part deals with various aspects of the work of the neo-positivist Otto Neurath, the leading advocate of the unity of science movement and editor of the *Encyclopedia of Unified Science* (1938–1970) until his death in 1945. The second part deals with systematic issues concerning the unification of science from contemporary viewpoints. This juxtaposition may strike readers as somewhat odd, given how thoroughly the neo-positivist unity of science programme has been criticised in the last half-century. Yet therein precisely lies a point. Neurath's conception of the unity of science was not the orthodox one and this makes for its relevance for contemporary philosophy of science—whether his alternative conception is regarded positively or not.

The orthodox conception of the unity of science is best characterised as the idea that all of the sciences could be arranged in a hierarchy of increasingly specialised disciplines, the higher ones being related by reduction both of laws and terms to the lower ones terminating with physics at the base. The most ambitious example of this conception is Paul Oppenheim and Hilary Putnam's "Unity of Science as a Working Hypothesis" (in Vol. II of the *Minnesota Studies in the Philosophy of Science* from 1958). A considerably more moderate conception of the unity of science, thinking of complete unification as an ideal limit point, was developed by Robert Causey in *Unity of Science* (Dordrecht: Reidel, 1977) and defended in his chapter in this book: significantly, however, the reduction of the fundamental laws of one theory to the fundamental laws of another here too remains the paradigm example of unificatory work. Neurath's view was quite different.

Contrary to what some of his shorthand sloganeering may suggest, Neurath was not interested in the reduction of all scientific terminology to physics or even of mental states to behavioural dispositions or indeed of the laws of the special

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sciences to those of the fundamental science. What he promoted as physicalism was the view that all the processes that empirical science deals with can be understood to be spatio-temporal ones and that all the claims that empirical science makes are in principle intersubjectively testable. By unity of science, finally, Neurath meant first and foremost the demand that the laws of all the sciences be connectable in the explanation and perhaps prediction of particular events or processes. He did not merely warn against vaulting ambition, but located the central concern of the unity thesis elsewhere. Nancy Cartwright once called this “unity at the point of action”; here, she and her collaborators speak more narrowly of “unity in procedure of inquiry” (95), but this does not contradict that Neurath’s point was always that, typically, inquiry must be understood in its practical context.

Many aspects of Neurath’s unorthodox view may strike contemporary post-positivists as close enough to common sense to worry about their newsworthiness—but therein only lies a double challenge of a historical and systematic kind. First, we must ask not only what prompted Neurath to develop his unorthodox views and defend them in broadly the very same context that also fostered the orthodox unity of science conception, but we must also ask what brought about their occlusion and long obscurity after his death. And second, we must ask why his is a unity of science view after all and not a disunity of science view, and this means confronting Neurath not only with his critics of old (whose caricatures long dominated what was remembered of him) but also with contemporary critics of what is deemed an unseemly positivist legacy.

It would be plainly false to say that these matters have been left unaddressed since the revival of interest in real logical positivism—as opposed to its text-book version—gathered pace in the later 1980s. But neither would it be correct to say that there is nothing new left to say about them. The present volume contributes to both of these accounts and adds to the current discussion of the unification of science programme in its own right.

Part 1 contains a translation by Thomas Bonk of an important but previously unpublished paper on the unity of science by Neurath and a commentary by Karlheinz Barck; interesting papers on Neurath’s epistemology, his unity of science project and the picture languages he developed by, respectively, Jan Sebestik, Olga Pombo and Alti-Veikko Pietarinen; a paper on Moritz Schlick’s criterion of reality by Thomas Bonk and one defending the patchwork of laws conception of the unity of science by Sheldon Steed, Gabriele Contessa and Nancy Cartwright; and a paper by Gideon Freudenthal and Tatiana Karachentsev on Gregorius Itelson, a major but under-discussed influence on the young Neurath. Part 2 offers five papers of a more general nature on the unity of science by, respectively, Daniel Andler, Mario Bunge, Robert Causey, Jan Wolenski and C. Ulises Moulines, all of them defending a modest version of the programme and helpfully clarifying different aspects of its contemporary status; one very broad-span historical overview of the unity idea by Andrés Rivadulla; and more specialised papers on the role of biology in the unity of science programme by Juan Manuel Torres, on the logic of abductive inference by Angel Nepomuceno, Fernando Soler and Atocha Aliseda and on the analysis of flat properties by Hossein Sheykh Rezaee.

Despite the editors' programmatic good intentions, this is very much a book of two halves. In each of Parts 1 and 2, only one paper makes more than a passing reference to the concerns of the other part. In Part 1, Steed, Contessa and Cartwright treat Cartwright's patchwork conception as a contemporary extension of Neurath's unorthodox conception of the unity of science and defend it against the claims for a "general super theory" (98). In Part 2, Andler ingeniously and sympathetically uses Neurathian insights to save a "federalist conception" of unity of science from the anti-unitarian criticisms by philosophers like John Dupré and Rom Harré (141). Together with the editors in their Introduction, these papers make a good case for revisiting Neurath's distinctive understanding of the unity of science thesis in the light of the rather unfortunate history of its orthodox version. Beyond that, however, there is little interaction between the two parts of the book. Apart from Andler and Causey (who cautions against what he regards as Neurath's unduly disunitarian tendencies), no author but one in Part 2 thinks Neurath's writings worth referring to (many do not even mention him). Whether the judgements implied are always well-grounded can be questioned. Rivadulla shows no recognition of the difference of Neurath's approach and, moreover, speaks misleadingly of "the neo-positivist foundationalist programme of the Unified Science" (223). Bunge even more crassly misreads an entire tradition by speaking of the *Encyclopedia* as promoting a logical empiricism "which adopted the new (mathematical or symbolic) logic as the supreme tool of philosophical analysis, but also the old phenomenalism of Ptolemy, Hume, Kant, Comte and Mach" (147). Even Moulines's brief remarks do not do very much better by transposing a crudely instrumentalist picture into Neurath's "universal slang" and mistaking what for Neurath was a condition of the testability of scientific claims for a delimitation of their domain when he claims that "Neurath's 'unified science' refers to the totality of our genuine knowledge as expressed by, and only by, a thoroughly purified thing-language" (239). Work of the type represented in Part 1 has clearly passed these authors by.

From a historical perspective, the primary merit of this collection is twofold. First that it makes available in translation Neurath's response to Horkheimer's intemperate criticism of the philosophy of science of the Vienna Circle in his "The Latest Attack on Metaphysics" in the Frankfurt School's *Zeitschrift für Sozialforschung* in 1937. Horkheimer's piece set the agenda and tone, as Hans-Joachim Dahms has shown (*Positivismusstreit*, Frankfurt a.M.: Suhrkamp, 1994), for the so-called positivism dispute in German sociology of the 1960s and first implanted the image of logical positivists as unwitting helpmates of fascism in the minds of would-be critical thinkers ever since. Horkheimer flatly refused to publish Neurath's response. Long forgotten, this response has since been quoted by Dahms (op. cit.) and extensively discussed by John O'Neill and myself ("Horkheimer and Neurath: Restarting a Disrupted Debate", *European Journal of Philosophy* 12 (2004) 75–105) so I need only note here that it should be required reading for all those tempted to imbue Horkheimer's paper and its echoes in the literature through Habermas and beyond with any authority.

The second outstanding piece is Freudenthal and Karachentsev's "G. Itelson—A Socratic Philosopher". The authors pull together from a great diversity of sources what little is known about this Russian-born philosopher who lived in Berlin from

1884 until he was murdered by anti-semites in 1926. A correspondent with many academic philosophers but without such he was position himself (in later years, he was a revered teacher at the Jewish Adult Education Institute in Berlin) Itelson's views were communicated at philosophical congresses in person (and widely commented upon) but rarely laid down in writing. According to the respective *compte rendu*, *Bericht* or *Atti*, Itelson contributed papers to the Second, Third and Fourth International Congresses of Philosophy in Geneva 1904, Heidelberg 1908 and Bologna 1912. As reported by Couturat, in 1904, Itelson put forth a definition of logic as "the science of all objects, existent or not, possible or impossible" and a definition of mathematics as "the science of ordered objects" (115–116). Differentiating logic from psychology, epistemology and ontology, Itelson crossed swords with Windelband and even Husserl and even Husserl, and the pre-Wittgensteinian significance of his definition is evident. Neurath cited Itelson's definition of logic in one of his early logic papers (co-written with Olga Hahn), and in later years, he mentioned him as a significant influence during his student days, crediting him with the term "empirical rationalism" (which Neurath once contemplated as a term for what ultimately he chose to call "logical empiricism"). Freudenthal and Karachentsev succeed admirably in piecing together the elements of Itelson's views so that despite "the very few philosophical traces Itelson left, we nevertheless [can] recognize the major tenets of logical empiricism" (120).

Despite these highlights, unfortunately it must be remarked that the book could have done with more editorial resources. Never mind that the Introduction does not mention the papers by Nepomuceno, Soler and Aliseda, by Rivadulla and by Rezaee in Part 2 or that it also suggests that the paper by Sheldon, Contessa and Cartwright is to be found in Part 2, not in Part 1 where it does appear (6–7). More troubling is that in addition to an unusually high number of typographical errors in Part 1 and occasional bouts of unidiomatic English throughout both parts, one finds incomplete or otherwise corrupted foot- and endnote material (28, 56, 95, 108), mnemonic devices indicating where a quotation should have gone that is not after all supplied (21–22), and variants of first names and of spellings of the last name of presumably the same person (110, 120–121). Publishers of expensive hardbacks like the present volume should do better.