
Intersubjective Accountability: Politics and Philosophy in the Left Vienna Circle

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In different places Rudolf Carnap and Otto Neurath affirmed “a noteworthy agreement” and an “inner link” between their philosophy of science and political movements agitating for radical socio-economic change. Given the normative abstinence of Vienna Circle philosophy, indeed the metaethical commitments of its verificationism, this claim presents a major interpretive challenge that is only heightened when Neurath’s engagement for the socialization of national economies is taken into account. It is argued here that Carnap’s and Neurath’s positions are saved from inconsistency once some careful distinctions are understood and it is recognized that they, together with the other members of the Circle, adhered to an epistemic norm here called “intersubjective accountability.”

1. Introduction

The question of the political potential possessed by the philosophies of the Vienna Circle is complex for more than one reason. It is so partly due to the politically heterogeneous membership of the Circle, partly due to the difficult if not extreme political circumstances under which they had to operate, and partly due to the variable meanings of the parameter “political,” some of which are and some of which are not compatible with, in turn, variable versions of the doctrine of the value-neutrality of science. For instance, philosophies of science may steadfastly be standing guard against pseudo-scientific nonsense being paraded as worthy of credence in public discourse, this concern for intellectual hygiene becoming “political” depending on who spouts

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the nonsense and for what purpose. Philosophies of science may also, however, allow political considerations to play a role in theory change under conditions of underdetermination by empirical evidence, this mostly in social and environmental science. Still other philosophies of science may reject any thought of value-neutrality and be pursued expressly for what are considered universal moral-political ends, while yet others are ready to serve the needs of party-political partisanship according to whatever the demands of the day may be.¹ As it happened, most members of the Vienna Circle have had one or another variety of these views or stances ascribed to them, some of them rightly so, others not. But my aim here is not quite to determine what they thought the proper political role of their philosophy was, if any, or what it should have been, on quite such a broad scale. My aim here is far more specific: to make sense of some *prima facie* puzzling assertions by Otto Neurath and Rudolf Carnap about the relation that their philosophical outlook bears to the attitudes of movements agitating for more or less radical transformations of social, economic and political life. So while I will not try to answer the big questions, I will have to touch on them to find an answer to the smaller one of concern here.

The question of the political potential possessed by logical empiricism is not new, of course, for already in the 1930s the movement was subjected to attacks from different ends of the political spectrum. In 1933 Hugo Dingler denounced the “formal-calculatory thinking” of the Berlin Group around Hans Reichenbach for its affinity with “political bolshevism,” while in 1937 Max Horkheimer styled the theoreticians of the Vienna Circle as unwitting helpmates of fascism—both attacks which the intended victims quickly (and rightly) refuted.² But the question of the political valence of logical empiricism continues to be discussed even though nowadays less exaggerated alternatives are in focus. A recent article that drew attention to the space that some of the Vienna Circle’s theories of science left open in the choice of hypotheses and research projects for contextually conditioned and value-laden considerations (thereby pointing to a significant openness compared to orthodox analytical theory of science) was criticized for failing to recognize the need for an explicit value engagement of philosophy of

1. If names were required, one could call them, respectively, “contextually political,” “minimally political,” “morally political,” and “party-politically political.”

2. See Dingler (1933, Vorwort) and Reichenbach (1934), as well as Horkheimer ([1937] 1972) and Neurath ([1937b] 2011); for discussion, see, respectively, Danneberg (1998) as well as Dahms (1994, pp. 97–143, 166–181) and O’Neill and Uebel (2004). The anti-semitic trope in Dingler’s charge may also be noted (“formal-calculatory thinking”), as well as the fact that Horkheimer refused to publish Neurath’s answer, allowing, thirty years on, Habermas’s questionable motto “That we disavow reflection *is* positivism” ([1967] 1972, p. vii, orig. emphasis) to seem quite reasonable.

science: only the latter supposedly is able to claim political relevance.³ Not only the past of philosophy of science shows it to be embedded in socio-political and cultural contexts: the writing of this history appears to do so no less.

Raising the question of the relation between Neurath's projects for socializing national economies and logical empiricism, as I will do, may seem to bring old battle lines back to life, even though the question lacks practical relevance now. In this we may see a difference with the time when Neurath's projects were being developed, but even this could be contested—at least in light of the devastating judgment passed by Max Weber on Neurath's attempts to realize his ideas for the revolution of 1918/19 in Bavaria of all places.⁴ In any case, my point is not to redeem the more or less utopian aspects of Neurath's project (which tell more about the author's background than the philosophical movement to which he belonged).⁵ It is rather to confront a particularly sharp challenge arising from a characteristic tension in the self-understanding of some leading first-generation logical empiricists.⁶

Notably, Neurath and Carnap placed themselves in the glare of what seem conflicting demands. The Circle's own unofficial manifesto, *The Scientific World-Conception. The Vienna Circle* (authored by them with help from Hans Hahn and others), did so most prominently.⁷ It speaks of a “noteworthy agreement” (“*merkwürdige Übereinstimmung*”) and an “inner link” (“*inneren Zusammenhang*”) between “attitudes toward questions of life” and the “scientific world-conception” of the Vienna Circle. As regards those attitudes, explicit reference is made to “endeavors toward a new organization of economic and social relations, toward the unification of mankind, toward a reform of school and education” (Carnap, Hahn, Neurath [1928] 2012, pp. 80–81). Clearly, Neurath's socialization plans fall under the first of these categories, yet wherein the “inner link” between them and the scientific world conception consisted was not spelled out.

3. See Uebel (2005a), Richardson (2009) and Uebel (2010); see also Romizi (2012) for a related analysis of the Vienna Circle's “scientific world-conception” as an attitude or stance and discussion of how “philosophy of science does not need to entail a theory of values to be politically engaged” (p. 234) when it is conceived of as an activity in a historical context.

4. See the letter to Neurath in Weber (1921, p. 488).

5. For Neurath's utopianism see his ([1919c] 1973); for discussion of it see Uebel (1996, 2008a); for Neurath's relevant biographical background, see Uebel (1995).

6. For the political differences between Circle members, see section 3 below; for difference in political valence between the early and the later orthodox logical empiricism, see Reisch (2005).

7. For the history of its production and early reception, see Uebel (2008b).

The tension in question, most broadly, is that between value-free *theoria* and engaged *praxis*, a tension that perhaps cannot be entirely resolved but must at least be understood correctly if one wants to avoid mistaken judgments. Moreover, specification of more than the categorical difference between *theoria* and *praxis* is required to redeem Neurath's and Carnap's positions. What needs to be recognized is that not only logical empiricist philosophy of science in general but, in the extreme, also Neurath's socialization theory was animated by a certain enlightenment ambition which, it was thought, provides a bridge between theory and practice.⁸ My aim here is to spell out this ambition in a way that preserves the scientific and philosophical probity of Neurath and Carnap's views but also allows them to keep their eyes on the prize.

2. Neurath's Theory of Economic Socialization: A Brief Sketch

Since Neurath's socialization theory is known far less than the philosophies of science and language of logical empiricism, however, I must begin with a brief outline to show what the analytic task is that is to be confronted here. The politics at issue here are not simply the reformist policies of the Austrian Social Democratic Party (SDAPÖ)—which both Neurath and Carnap were members of—but much more radical schemes of social transformation. Importantly, what I here call Neurath's socialization theory were his plans for the economic reorganization of society and their theoretical underpinnings—*not* whatever normative arguments may be used to agitate for these plans.

Neurath developed his socialization theory and promoted the associated program mainly in the years 1917–1921, so his involvement anticipated but also outlasted the revolutions in Germany and Austria at the end of World War One.⁹ At issue for him was a reorganization of the entire economy of a nation that did not concentrate on the appropriation of the ownership of the means of production by the workers' state and their organs, but on the appropriation of the executive power to decide the use of these

8. Romizi (2012) is correct to stress that the scientific world-conception of the entire Vienna Circle was political in a broad sense (contextually political), but this still leaves the connection between it and the left wing's radical politics to be determined. So whereas my (2005a and 2010) focused on underdetermination as a lever for a kind of politicization of the philosophy of science not shared across the Circle as a whole, here I aim to bring out what even Neurath's socialization theory shares with the scientific world-conception generally.

9. On the German revolution of 1918/19, see Kluge (1985); a well-informed contemporary account of the German political debates about socialization debate is given in Ströbel ([1921] 1922); for similar debates in Austria, see Weissel (1976). Neurath still defended his plans in ([1925a] 2004).

means of production.¹⁰ This meant the abolishment of the market and its “invisible hand” in coordinating the economic actions of state, firms and individuals. The economy was to become subject to a comprehensive plan by which the conditions of life of all members of the society were to be improved, and every enterprise within the economy was to play its designated role.¹¹ For present purposes we can ignore the political-organizational aspects of Neurath’s plans and focus only on the distinctive principles according to which economic planning and decision-making were to be undertaken. Importantly, the improvement of the life conditions of the population was not expected to follow on from increasing the gross national product under different management. Rather, in the absence of a market, it needed a wholesale reorientation of economic decision-making and it was for this alternative conceptualization of economic matters that Neurath developed the concepts of calculation in kind (“*Naturalrechnung*”) and economy in kind (“*Naturalwirtschaft*”).

Calculation in kind involved calculating the costs of processes of production *in natura*, that is in terms of the quantities of materials and labor required for the production of goods. In order to be able to effect such calculations for an entire economy, so-called universal statistics were needed, which provided planners with quantitative data about typical processes of production processes and about given natural and labor resources, as well as data about typical consumption patterns of raw materials and finished products. These universal statistics were only beginning to be developed, as Neurath conceded—and even that was overoptimistic in light of a later argument by Friedrich Hayek.¹² Economy in kind, by contrast, designated a form of socio-economic organization according to which investment decisions across the whole economy, decisions about the allocation of

10. A good overview of Neurath’s engagement in the German and Austrian revolutions is given by Paul Neurath (1994) as preface to a careful selection of Neurath texts including ones from his writings on economics (P. Neurath and Nemeth 1994). Sandner offers a political biography (2014); Uebel (2004a) offers an overview, in context, of his socio-economical works.

11. That the implementation of Neurath’s socialization plans would be subject to what have been major points of anti-socialist criticism ever since Schäffle (1875), namely infringements of the sovereignty of labor and consumption, must not go unmentioned: “The right to unearned income on the basis of private property is no longer recognized.” So Neurath and Schumann in a “Draft of a Law of Socialization” (1919b); the eight-point draft is quoted in full in Nielsen and Uebel (1999, p. 72). The question of how this infringement of “bourgeois” liberties sits with the enlightenment agenda of individual autonomy requires a separate treatment on another occasion.

12. Hayek’s so-called information argument disputes the possibility of ever collecting together and making explicit all the data needed by a central agency to plan total production; see Hayek ([1935] 1948, p. 155; [1940] 1948, p. 202; [1945] 1948, p. 91).

resources as well as about details of production processes, were not determined by the profit principle, as in a market economy, but by the decision of the population and/or its representatives about which of several possible economic plans were to be implemented in light of their preferred in-kind goals of production.¹³

Neurath's proposals for the socialization of the economy provoked sharp criticisms from Ludwig von Mises, whose attempt to demonstrate, against Neurath, the principled irrationality of any planned economy reignited the so-called socialist calculation debate. This was a debate about the possibility of "rational" economic decision making in conditions of partial or total absence of markets that started in the late nineteenth century and reached an early peak with the varied responses to Mises's reply to Neurath.¹⁴ Notably, by the time the socialist calculation debate moved to the English-speaking world in the late 1920s and 30s, the focus had shifted from Neurathian marketless socialism to early market-simulating forms of economic calculation.¹⁵

3. Politics in the Vienna Circle: Personal, Institutional and Doctrinal Matters

So much for the particularly pointed challenge raised by the question of wherein the inner kinship of the scientific world conception and the attitudes towards questions of life lies for Neurath. Broadening our concern I must note that already as regards its philosophies of science it is misleading to speak of *the* Vienna Circle, even more so of logical empiricism as a whole as monolithic. This holds true all the more of its politics. Following Rudolf Carnap's Neurathian locutions, one can distinguish within the Vienna Circle already in 1931 a "left wing" (Neurath, Carnap, Hahn, Philipp Frank) from a "more conservative" wing (Moritz Schlick, Friedrich Waismann). While the term "left" here was used primarily with regard to dissent from Wittgenstein's dogma of the impossibility of metalinguistic discourse, its ideological overtones were by no means unintended (Carnap 1963, pp. 57–8).¹⁶

13. On this see particularly Neurath ([1919b] 1973; [1925a] 2004; [1925b] 2004; [1935] 1987). It is to be noted that Neurath's calculation in kind made it possible to take account of ecological sustainability considerations without requiring the problematical monetization of potential environmental effects. This rendered Neurath a pioneer of "ecological economics": see, e.g., Martinez-Alier (1987) and O'Neill and Uebel (2014).

14. See Mises ([1920] 1935; [1922] 1951). For a discussion of the post-war Austrian theoretical debates about socialization, see Chaloupek (1990). For Neurath's responses see his ([1925a] 2004; [1925b] 2004) and the discussion in Uebel (2005b).

15. For the by now standard discussions of this later debate in the international context, see Lavoie (1985; Steele 1992).

16. On the political contrast between Schlick and Neurath see Stadler ([1997] 2015, pp. 277–84).

Then we must note that most of Neurath's writings on economic socialization date from the time before the Vienna Circle. However, since this does not hold of all of them and one important small monograph was also published in his Vienna Circle series *Einheitswissenschaft*, and since Neurath also had been a member already of a pre-World War One discussion group focused on philosophy of science with Vienna Circle colleagues-to-be Hahn and Frank, among others, it is arguably as difficult to distinguish the socialization theorist Neurath from the logical empiricist Neurath as it is to distinguish the physicist Frank and the mathematician Hahn from the logical empiricists Frank and Hahn.¹⁷

So who in the Vienna Circle was in favor Neurath's ideas about socialization? Even on the left wing only Carnap publically affirmed his broad agreement in later years, despite the fact that Hahn chaired the Association of Socialist Academics and Frank was a keen observer of developments in the Soviet Union.¹⁸ (We may presume sympathy but also reservations on their part.) The more conservative wing around Schlick, especially Waismann, but also Viktor Kraft, Felix Kaufmann and Kurt Gödel, was rather opposed Neurath's radicalism. This is true also of Karl Menger, even though his second edition of his father's *Principles of Economics* placed him at odds with contemporary representatives of the Austrian School of Economics like Mises and Hayek, who did not care to learn that the founder of their school had in later years resolved to concede to the state a significant role in securing social justice—as the second edition, which they disowned, made clear.¹⁹

In short, just as politics was not a theme discussed in their Thursday evening meetings, so *the* Vienna Circle (even less logical empiricism *as such*) did not have a political program. Individual members felt affinity with socialist programs, othes with more liberal ones, but collectively they espoused no political engagement. None of this is news, of course, but note that by ruling out a collectively determined or coincidentally shared personal stance as “the politics of the Vienna Circle,” the very idea that their philosophies may have any political dimension is called into question. For, turning from the thinkers to their doctrines, one cannot but stumble right away over an official philosophical doctrine that appears to finish all such talk—the doctrine of noncognitivism.²⁰ Now noncognitivism comes in a

17. On the so-called first Vienna Circle, see Haller ([1985] 1991) and Uebel (2000a).

18. For Carnap's public affirmation, see his 1963, pp. 83–4.

19. See C. Menger (1923) and compare Hayek ([1930–33] 1950, pp. 32–3) and Cangiani (2006).

20. This point was made forcefully some time ago by Rainer Hegselmann for whom the members of the left Circle, especially Neurath, simply “overlooked the inconsistency between [their] conceptions of theoretical and practical rationality” (1979, p. 61).

great variety of versions of which were adopted by different members, but none of the ones adopted on the left wing even attempted to reserve a semblance of truth-valuability for value judgments.²¹ In light of this noncognitivism, only political abstinence on part of the philosophies of the Vienna Circle seems to be consistent—and the idea of any engagement appears decidedly odd.²²

To be sure, even on its own noncognitivism is not unproblematic. Yet its typical conclusion that value judgments are “meaningless” requires a more differentiated understanding than many critics of logical empiricism can muster (see, e.g., Carnap [1932] 1959, p. 77). What was meant by this all along is only that they are “*cognitively* meaningless”: while this bars unconditional value judgments from scientific discourse on account of their failure to be truth-valuable (for they are not intersubjectively testable), it nevertheless grants them whatever meaning is needed to allow a hearer to understand the attitude a speaker expresses. (By contrast, conditional value judgements constitute truth-valuable assertions to be understood as statements of empirically testable means-ends relations.)²³

Likewise it is not the case that noncognitivism makes it impossible, as often suggested, to discuss moral or political values in a rational fashion. For there exist, besides the “intuitive” attraction and repulsion that values possess for us, logical relations between value statements that exclude certain combinations, moreover, there are the consequences to consider that follow from realizing values in actions (see, e.g., Carnap 1934a, 1963, pp. 999–1013; K. Menger [1934] 1974; Reichenbach 1951, ch. 17). These logical relations and practical consequences provide criteria which can be appealed to in arguments for or against given value judgments and which can make their endorsement at least intellectually intelligible (even they are not shared).²⁴ Only those whose conception of rationality demands conclusions

21. See Siegetsleitner (2014) where exceptions to the noncognitivist position in the wider Vienna Circle are also discussed.

22. It is the recognition of the noncognitivism that Neurath broadly shared with his Vienna Circle colleagues that prevents the full assimilation of his otherwise very similar stance to current pragmatist and feminist positions on science and values, as it was suggested in Howard (2006, 2009) where a different interpretation of Neurath’s metaethics is offered. Discussion of this point would lead too far afield here and must be deferred to another occasion.

23. For Carnap and the left Circle, verificationism primarily was a criterion of possession of cognitive meaning, not a theory of what meaning consists in; it was only briefly accepted in the latter capacity in 1930–31 and then superseded by the theory of logical syntax.

24. None of this would have been news to Max Weber, of course; see Weber ([1913] 1949, pp. 13–14, 18–22): these are all legitimate ways of dealing with evaluative discourse while observing his requirement of scientific value-neutrality.

to be established on the basis of cognitive premises alone could deny rationality to noncognitive discourse about values. Of course, what noncognitivism precludes are unconditionally prescriptive first-order theories, but even second-order theories thereof are not precluded.

Yet clearly, politics demands precisely that first-order values be confessed—and this is not a business the Vienna Circle was in. So, again, why do I insist on my leading question? Because, I answer, of the Circle's own unofficial manifesto: the “brochure” (as its main authors Carnap and Neurath called it) states explicitly—not only midway through and by the way but also in its conclusion—of “the spirit of the scientific world-conception” that it “penetrates in growing measure the forms of personal and public life, of education, of child-rearing, of architecture” and “helps shape economic and social life according to rational principles” (Carnap, Hahn, and Neurath ([1928] 2012, p. 90). Here the text again points to the “inner link” mentioned previously, apparently even to normative principles which, however, cannot to be found in the official philosophies of the Vienna Circle. The tension between practical aspiration and theory is clear.

Since their protagonists recognized no direct logical link from their philosophies of science to moral or political prescriptions, one may be tempted to refer to Carnap's Preface to the *Aufbau*. It likewise celebrated “an inner kinship” (“*innere Verwandtschaft*”), namely “between the attitude on which our philosophical work is founded and the intellectual attitude which presently manifests itself in entirely different walks of life” like art, architecture and “movements which strive for meaningful forms of personal and collective life, of education, and of external organization in general” (Carnap [1928] 1967, p. xviii). Now the Preface also identified his and his co-workers' “emotional needs” as the following: “clarity of concepts, precision of methods, responsible theses, achievement through co-operation” (Carnap [1928] 1967, p. xvii).²⁵ Yet the attempt to reduce, on account of this latter remark, the affinity in question to a merely emotional one is easily thwarted once the context of Carnap's remarks is considered.

In that Preface Carnap was concerned to stress that the basic attitude of his book, and of related publications by his Circle colleagues, was a scientific one. By this he understood that “the strict and responsible orientation of the scientific investigator” also becomes their “guideline for philosophical work” which will no longer, in traditional fashion, approximate that of poets (Carnap [1928] 1967, p. xvi). Carnap conceded that, in general, “the basic orientation and the direction of interest”—of scientists like everybody else—“are not the result of deliberation, but are determined by emotions, drives, disposition and general living conditions,” but he added,

25. I'll return to the phrase “*Verantwortlichkeit der Thesen*” in the next section.

importantly: “The decisive factor is, however, that for justification of a thesis the physicist does not cite irrational factors, but gives a purely empirical-rational justification. We demand the same from ourselves in our philosophical work” (Carnap [1928] 1967, p. xvii). Scientific probity was saved by distinguishing the context of justification from the context of discovery.²⁶

Notably, it was only after stating his demand for the rational justification of philosophical claims, that Carnap referred to the “emotional needs.” The demand for clarity and “responsible” reasoning therefore is *not reducible* to these demands of the heart, though, for those so inclined anyway, clarity and responsible reasoning can also fulfill this a-rational function. So far from resolving our quandary, Carnap’s Preface only heightens it. Added to our task is now the explication of his remarks: the “inner link” of which the manifesto spoke and the “inner kinship” of his Preface clearly address the same phenomenon.

4. Responsibility and Accountability in Reasoning

Two avenues of explication of these problematic statements remain open—other than charging their authors with contradictions or reducing their assertions to expressions of merely personal attitudes. The first is to seek refuge in the Marxian doctrine of base and superstructure, the second is to find a cue in Carnap’s talk of responsibility in reasoning.

The first avenue still open is to interpret their remarks in the sense of the Marxist theory of ideological superstructures being ultimately determined by the economic base. There are indications that Neurath was favorably inclined towards this doctrine (for instance, with his view, abandoned again as the 1930s progressed, that the advance of the anti-metaphysical world-conception moves in conformity with the increasing technical rationalization of the world of work and everyday life), even though he always was aware of the need to improve our understanding of it (for instance, as designating an asymmetry of predictability) (see, e.g., Neurath [1931] 1973, p. 349; [1936] 1981, p. 677; 1944, p. 22). Yet even on this interpretation of the “link” between “attitudes toward questions of life” and the “scientific world-conception” it remains obscure wherein the “agreement” consists. Not only is there space but also cause to consider further the second possibility of understanding the “spirit of the scientific world-conception” in a broadly epistemic fashion.

26. For the long history of this distinction, see Hoyningen-Huene (1987). By the way, that theorists of the left Circle did not exclude “the social” from the context of justification—which exclusion accounts for much of the detrimental effect application of the distinction may have—is argued in Uebel (2000b).

The second route of explication to be explored builds on Carnap's puzzling phrase "responsibility of theses" (*Verantwortlichkeit der Thesen*) by which he designated the attitude that he believed his philosophy and the new transformative movements have in common. Since attributing responsibility to theses is strictly speaking nonsensical he is best understood as pointing to what it is about theses that allows them to be forwarded in a responsible manner.²⁷ These theses can, as it were, stand up for themselves, they are backed by "justifications" (to employ another term Carnap used in this context). Throwing the manifesto's "spirit of the scientific world-conception" into the mix, the suggestion begins to crystallize that the "inner link" or "inner kinship" that Neurath and Carnap appealed to should be understood as related to this idea of cognitive forbearance—an epistemic value of sorts. (Epistemic values are immanent to science and exempt from the strictures of noncognitivism.)²⁸

One pay-off that pursuing this avenue of explication promises is that it obviates having to search for first-order prescriptive principles that would guide the "new organization of economic and social relations." It only requires having to inquire what makes proposals for such a reorganization at all rational (which is not the same as making them uniquely, let alone unconditionally, commendable). What is it then that the making of makes claims or proposals rational? We can begin with what sounds like a truism. What makes making knowledge claims rational is that they are *put forward as intersubjectively justifiable*. This need not mean that these knowledge claims must have been *shown* justified in order to be rational, for then only making those claims would be rational that as a matter of fact were shown justified, nor need it mean that knowledge claims must simply *be* justified for making them to be rational, for then only the making of those claims would be rational that as a matter of fact are justified. To allow for fallibly rational discourse we must allow for claims to be made that may turn out unjustified (or false)—as long as they were put forward sincerely and ready for critical intersubjective scrutiny. (The satisfaction of the claim to justification is important but concerns not their rationality but their status as knowledge.) The bottom line is accountability.

Now that epistemic discourse observes a "norm of accountability" is not exactly news. For half a century now we've been able to say with Wilfrid Sellars that what makes knowledge claims rational as such is that they take their place in the "logical space of reasons" (see Sellars [1956] 1997). A knowledge claim is rational if the demand to justify it is recognized such

27. This fits with his talk of "the responsible orientation of the scientific investigator."

28. See also Steel (2010) with reference to recent debates.

that reasons are provided and the claim is abandoned once it is realized that these reasons fail to be good ones. That what is demanded is, moreover, intersubjective accountability has been clear also since J. L. Austin, still ten years earlier, drew attention to the performative dimension of knowledge claims (see Austin [1946] 1979). (To be sure, rationality demands agents acting on this norm of accountability not only in the presence of others, but also in the privacy of solitary reflection.) That this thought also was familiar to Carnap and Neurath is my claim here—as their talk of “responsibility” indicates.²⁹

While the terminology of accountability is not their own, it corresponds closely to the sense in which Neurath spoke of the “control” of scientific statements.³⁰ Neurath’s conception of so-called protocol sentences is expressive of precisely this attitude. Far from representing the evidential basis of science in terms of the content of a private experience (as had been common in the empiricist tradition), Neurath regarded this basic evidence to consist of intersubjective observational testimony and he designed an only initially puzzling set of conditions governing the acceptance of *bona fide* scientific data.³¹ It was by means of these or similar conditions that discussions of the validity of empirical evidence are conducted. It bears stressing that, on the left wing of the Circle, cognitive forbearance and accountability to one’s interlocutors were essential aspects of empiricism. Nothing in science was to be excused from the demand for intersubjective accountability, least of all the empirical base itself.

The norm of accountability provides a necessary condition for the rationality of knowledge claims: rational claims require reasons. Intersubjectivized it provides a necessary condition for rational discourse. It requires of participants in factual rational discourse that they only make claims that can be justified to an interlocutor—at the very minimum that they are open to their claims or proposals being interrogated in this fashion. Justifying a claim is a matter of making intelligible the state of affairs that is alleged to hold both on the object level (why should this be the case?) and reflexively concerning the claimant (what puts her in the position reasonably to make this claim?). In this fashion the norm of intersubjective accountability

29. Note that Neurath once remarked apropos philosophy being part of (unified) science (as scientific metatheory) that it is “a nice result that scholars, who deal with with the fundamental concepts of their science, do not seek the assistance of philosophers, but consider themselves competent and even personally obliged to engage in the clarification of their science and to take responsibility for these themselves” ([1936] 1981, p. 699).

30. See, e.g., Neurath [1931] 1973, p. 361 and [1932a] 1983, p. 63 where the term is translated as “check.” A discussion of the enlightenment dimension of the Circle’s verificationism must be deferred to another occasion.

31. See Neurath ([1932b] 1983) and Uebel (2007, ch. 11) for discussion.

justifies and secures consensus about arguments. Notably, this norm itself is capable of instrumental justification and requires no deontology, but it does seem to require adersion to the concept of truth (or, for Neurath, something to approximate its function). Its adoption as a rule can be shown to possess instrumental epistemic utility: it is conducive to holding true beliefs and/or making confirmable predictions.

5. Accountability in Practical Reasoning

As Carnap's *Aufbau* preface stated and the collective manifesto plainly pre-supposed, scientific discourse observes the norm of intersubjective accountability. The question is whether the "noteworthy agreement"—the "inner link" or "inner kinship" of the scientific world-conception and the transformative social movements favored by Carnap and Neurath—also consists in adherence to the norm of intersubjective accountability.

It may seem odd that this norm should help with the "endeavors toward a new organization of economic and social relations, toward the unification of mankind, toward a reform of school and education" of which the manifesto spoke. Does it not weigh heavily that with these endeavors we are not dealing with factual claims about what is but with value judgments or statements about what should be? Is it not the case that, insofar as no knowledge claims but aspirational goals are at issue here, the norm of intersubjective accountability is utterly irrelevant? This, I think, would be a mistake. To be sure, as with all practical discourses, given noncognitivism, it is not a matter here of providing insight that this or that must be done, of providing proof of the supposed truth of certain imperatives. Rather, it is a matter of establishing a kind of agreement about practical goals via discussion, deliberation and persuasion.³² But, as noted, this does not mean that rationality and the norm of intersubjective accountability has no role to play in practical contexts (see Weber [1904] 1949).³³ With regard to basic value judgments or unconditional imperatives, the logical and practical consequences of their adoption can be delineated and assessed, while nonbasic value judgments and conditional imperatives are

32. Acceptance of such goals and the resultant transformation of a hypothetical into categorical imperative is an evaluative decision and value-laden action and cannot be understood as true or false independently of the accepted basic goals or values: such is the fate of noncognitivism. Moreover, it also follows that, importantly, such acceptance may be only partial and compromise rather than consensus is likely to provide the "kind of agreement" sought.

33. On Neurath's in important points consonant views see his ([1913] 2005), a contribution to the same closed meeting of the Verein für Sozialpolitik as Weber ([1913] 1949).

even open to empirical assessment as means-ends relations.³⁴ Intersubjective accountability in these regards is by no means inoperative here.

It is possible then to see the spirit of the scientific world-conception involved, as Carnap and Neurath envisaged, also in certain practical programs like the “endeavors toward a new organization of economic and social relations, toward the unification of mankind, toward a reform of school and education”. In much of his own educational work, Neurath was concerned to lend accountability to practical arguments. “One could show over and over the worker with a red flag in the wind, the column marching towards the sun, but the effect of such pictures is not stimulating,” Neurath once noted in a lecture to youth group leaders of the SDAPÖ in Red Vienna. Instead he recommended: “How many debates get started when informational pictures contrast the taxes raised and their use by the City of Vienna with those raised and spent by the Federal Government?” (Neurath 1932c, pp. 165–6).³⁵ Not coincidentally, the provision of just such “informational pictures” was what the Vienna Method of Picture Statistics, later called ISOTYPE, was developed for in Neurath’s own Social and Economic Museum in Vienna.³⁶ According to Neurath’s socialization theory, alternative economic plans were likewise offered, as we’ll see, by means of a similar accountability-inducing method of representing and justifying social interventions and remedial policies.

Can this conclusion be generalized to all the practical social endeavours with which Neurath and Carnap felt an affinity? It would seem that there is little reason to think that they would have doubted this. There is a question, of course, whether it was exclusively their type of progressive causes that could be advocated in this responsible fashion, but that is yet another matter. Moreover, whatever the answer to this may be in the abstract, there is also the question whether in their time and place their opponents were able to muster such rational accountability. A case can be made that, had they done so, they would have exhibited the extreme partiality, if not outright discriminatory intent, of the measures or institutions argued for which may, depending on the addressee, diminish their attractiveness.³⁷

34. In practical contexts it is often a matter of making intelligible the factual grounds which demand intervention, given a certain goal has already been accepted, or of motivating a change in the goal orientation itself on account of unwanted consequences of pursuing the current one or of its incompatibility with other accepted goal.

35. For a discussion of the Vienna Circle’s educational ethos, see Uebel (2004b).

36. For an illuminating discussion of the pedagogical principles behind Neurath’s picture statistics, see Nemeth (2019); for a comprehensive work on ISOTYPE generally, see Burke, Kindel, Walker (2013).

37. So while there also no reason to think that the Vienna Circle and logical empiricists in general were the only possible or even then the only actual philosophical adherents of the norm

It also seems that with regard to practical rationality, albeit at a very high level of abstraction, we can detect a certain consensus not only between Carnap and Neurath, but among all the members of the Vienna Circle, indeed among first-generation logical empiricists generally, whether they were socialists or not. Whatever their proposals, participants in public discourse have to be held to the norm of intersubjective accountability. The necessity to insist on this became ever clearer in light of the increasingly authoritarian behavior of the anti-democratic opposition to the first ever republics in Austria and Germany as the 1920s drew to a close. Herbert Feigl—not a member of the Circle’s left wing but a former student of Schlick who emigrated to the USA already in 1931 to escape the anti-Semitism that made his academic advancement in Central Europe impossible—gave pithy expression to this when he stated that logical empiricism considered foundational “two modest questions”: “What do you mean?” and “How do you know?” (Feigl [1943] 1949, p. 3). That these questions do not arise only in scientific discourse is plain, as is the fact that the norm of intersubjective accountability is not a particularly radical idea. (Feigl was not politically active in his American exile either, though he promoted, like Carnap, the ideals of scientific humanism.) That, on the other hand, former protagonists of the revolution of 1918/19 like Neurath or former activists of the progressive wing of the *Jugendbewegung* like Carnap subscribed to this norm as well needs no explanation.³⁸ (Reichenbach too must be mentioned here.)³⁹ In fact, the norm of intersubjective accountability is clearly articulated in Carnap’s famous principle of logical tolerance: “In logic, there are no morals. Everyone is at liberty to build up his own logic, i.e. his own form of language, as he wishes. All that is required of him is that, if he wishes to discuss it, he must state his methods clearly, and give syntactical rules instead of philosophical arguments” (Carnap [1934b] 1937, §17).

6. Neurath: Activist and Theoretician

Let’s return to Neurath. How do his activities and pronouncements fit into what we developed so far? The demand that categorical and unconditional value-judgments find no place in scientific discourse agrees with Weber’s

of intersubjective accountability, the ethos expressed was far from universal—considering, e.g., that in their time neither philosophers like Martin Heidegger nor Othmar Spann nor the populist Nazi and Austro-fascist movements they supported adhered to it.

38. On Carnap and the *Jugendbewegung* see Carus 2007, ch. 2; Tuboly 2017; Damböck and Werner 2020.

39. Reichenbach once explained to a student that “the whole movement of scientific philosophy is a *crusade*. Is it not clear that only by ending the dogmatism of irresponsible claims to know moral truth, that only by clarity and integrity in epistemology, people can attain tolerance and get along with each other?” (Schuster 1978, pp. 56–7, orig. emphasis). For Reichenbach and the *Jugendbewegung* see Kamlah 2013.

for value-neutrality.⁴⁰ Yet another agreement with Weber's conception is afforded by his admission that the choice of research agendas is value-relevant, that choosing these in the light of one's "cultural" values is legitimate (See Weber [1904] 1949, pp. 76–7, 81–4; [1913] 1949, pp. 21–2). On the eminently plausible reading that this includes social and political values Neurath was happy to agree, for it allowed for two important distinctions to be made and applied. First, we can distinguish between people acting as scientists and as engaged citizens of a polity. As scientist and theoretician Neurath had to remain value-neutral, as citizen he could be an activist promoting goals in the moral-political sphere. But, second, also as scientist he had a choice—which he did exercise—to pursue a value-relevant research agenda: socialization theory.

Yet could socialization theory in itself be value-neutral? While *prima facie* this may seem quite implausible, we must consider more closely how that theory is understood. Neurath's intention is best done justice to by employing his own concept of social technology (*Gesellschaftstechnik*) and viewing his theory of socialization as the theory of an alternative organization of economic processes. This theory concerns itself with a part of reality that is not (yet) actual but only possible.⁴¹ Crudely speaking, the economy can be understood in abstraction as a machine contributing to the reproduction of society; the theory of socialization develops blueprints for such a machine that solves the task of social reproduction differently from the one currently in use. Having chosen his research agenda, Neurath as scientist, theoretician and social engineer developed alternative plans for an organization of the economy, plans with different criteria of success to the one in existence. Yet it was only as an activist citizen that he could be a proponent of the reorganization, that he could express unconditional recommendations. To be sure, even as a scientist he could make qualified conditional ones—and this he did indeed in many otherwise frankly partisan pro-socialization pamphlets and lectures of the years 1919–1921 (see, e.g., Neurath and Schumann 1919a; Neurath 1919a, [1920b] 2004, 1920c, 1921). But Neurath was fully conscious of his own double role and he refrained from unqualified value judgments in strictly scientific publications about socialization and its theory, like his essay for the *Archiv für Sozialwissenschaft und Sozialpolitik*, a journal once co-edited by Weber, or in a

40. This agreement stated, note that Neurath's view is more radical insofar as Weber's own thesis is compatible with both cognitivism and its denial. Weber's thesis does not rely on the failure of value judgments to be truth-valuable at all, but on the impossibility to overcome the value pluralism of modernity so as to bind all to an intersubjective consensus.

41. For Neurath, the investigation of unrealized possibilities always forms part of science; see his [1910] 2004, p. 278.

monograph published in a series associated with the Vienna Circle (see, e.g., Neurath [1920a] 2004, [1935] 1987).⁴²

It is only the advocacy for the implementation of socialization that leaves the scientific attitude of value neutrality behind, thus distinguishing Neurath the theoretician and Neurath the activist.⁴³ So Neurath's socialization theory can find a non-compromising place both in Weber's schema and vis-à-vis noncognitivism.⁴⁴ But what about its enlightenment function? Note what needs to be done in the course of developing these socialization plans. To begin with, existing social and economic relations must be theoretically understood and represented before alternative, possible ones can be depicted convincingly. Now typically, these socio-economic relations are not intuitively given or accessible, being typically of a statistical kind.⁴⁵ Socialization theory depends on these non-obvious facts being brought to light, moreover, to be effective as an idea socialization theory requires that these facts are made widely available.

Here we reach a point that is all too easily lost when we think of Neurath as a theoretician of planned economies and associate the latter only with the Soviet Union. There the economic plans were weapons of the vanguard party that made decisions for the proletariat. Neurath's schemes, however, did not embody this top-down approach. Even though he generally bracketed questions of the organization of political power (a point on which he was criticized by fellow socialists) (see Cartwright et al. 1996, pp. 54–5), his numerous economic organizational plans, varied for different audiences and circumstances of application, all have this in common: the planners had to submit their plans as proposals for evaluation and

42. To be sure, the latter makes no bones about where its author stood, but, importantly, did not recommend his practical proposals but argued methodological, metatheoretical matters.

43. To avoid confusion, it must be noted that this distinction is not congruent with that implied by Neurath's characterization of his own role in the Bavarian council republic in 1919 as an unpolitical technician; on this see Cartwright et al. (1996, p. 53).

44. This calls into question the adequacy of Menger's criticism of Neurath's (even Hahn's) "conflation of science and politics," at least as reported in Leonard (2010, p. 121; cf. 2010, p. 162). Unsurprisingly Neurath employed scientific insights in his political advocacy but he did not import unconditional values into scientific reasoning. His repeated claim that social scientists do not enjoy the status of "extraterritoriality" (e.g., [1931] 1973, p. 406; 1944, p. 46) pertains to the role their science inevitably plays in civic discourse (and echoes the potential for engaged but non-prescriptive scientific practice that is allowed by Weber's demand for value-neutrality given the recognized value-relevance of the choice of research programmes).

45. This important point is stressed by Neurath in his discussion of informational graphics (1933, p. 461). To render them intuitive was one of the tasks pursued by Neurath in post-revolutionary times with ISOTYPE, his aforementioned system of pictorial representation of statistical relations (see fn. 36 above).

possible approval to the “people’s representatives.”⁴⁶ The experts did not have the last word: their role was to show what was doable, but they did not make decisions about what was to be done. Neurath’s conception of the planner’s role was non-prescriptive and democratic.

Still another important aspect must be noted immediately. To make rational decisions possible, the planners had to show not only what was doable, but also *how* it was doable. Thus they were not just tasked to develop one comprehensive economic plan, but several. The people’s representatives were not constrained to accept or reject one more or less fully developed plan, but free to select one from different plans on offer. This highlights what can be called the “empowering” aspect of the enlightenment ambition of Neurath’s conception: it is not just choice that is the matter here, but *informed* choice, for any such choice was to be made in awareness of what alternatives are foregone. To see how this is accomplished we must come back to the concept of calculation in kind by which the idea of social utility in general and preferred social utility in particular was to be determined.

How was it to be fixed what the preferred social utility, the preferred use of resources was? Under market conditions, the question of optimal resource allocation was answered by the calculation of estimated profit: given instrumental reason, such decisions were determined for agents by the market information they possessed. In the absence of markets and monetary calculation in Neurath’s marketless socialism the decision was not prefigured for agents by a calculus: now the decision makers had to reason and argue and, most likely, compromise. Of great importance here is that decision makers were presented not just with a menu of prospective final outcomes, but with fairly detailed calculations in kind which rendered plain what kind of resources were being used for what purposes and in what quantity. The comparison of these plans allowed for informed judgments concerning alternative uses of given resources. The plurality of plans made evident not only possibilities which representatives may not have been aware of, but also their opportunity cost that, depending on their decision, closed off other options. In sum, Neurath’s socialization plans served the norm of intersubjective accountability in the process of transforming social reality: having reasoned and argued about them, the people or their representatives could hardly avoid “owning” the decisions they took.

Note then that Neurath’s socialization theory built on a method designed to induce transparency in the representation and justification

46. See the organizational schemata of his socialization plans in Neurath (1921, Tafel 2) and compare his remarks at ([1919b] 1973, pp. 243, 250).

of social interventions. With this it reflects the enlightenment tendency of Vienna Circle philosophies and logical empiricism generally that focusses on the norm of intersubjective accountability. To be sure, there are other points of philosophical contact for Neurath's socialization theories. For instance, there is his physicalism which relates to the concept of "life conditions" the improvement of which for the whole population was programmatic for socialism: without the physicalistic determination of their criteria any public scrutiny of the effectiveness of the measures taken would be impossible.⁴⁷ Nonetheless it is, I believe, the norm of intersubjective accountability that best characterizes the point and depth of the "noteworthy agreement" between Neurath's socialization theory and the theories of science of the Vienna Circle.

Similar things can presumably be said for the other causes and movements to which the manifesto and Carnap's Preface declared the scientific world conception to be related. Regarded as an epistemic value—or epistemic proto-value⁴⁸—the norm of intersubjective accountability makes for the "inner link" between their philosophies and the programs for the movements for social change with whom particularly the members of the left Vienna Circle identified. (Even the more conservative wing around Schlick, despite their reservations about the particular goals in question, were unable to object to such a link in principle, given their own liberal democratic outlook.)⁴⁹

7. Conclusion

So a shared if submerged normative dimension belongs, after all, to the philosophies of the Vienna Circle and early logical empiricism. To be sure, it is to be found only on a very abstract level, moreover, it concerns among

47. On Neurath's theory of life conditions, see his ([1917] 2004; [1925a] 2004; [1931] 1981, p. 503; [1937a] 1973.)

48. The "or proto-value" signifies a certain blurred edge of my thesis: I'd like to guard against expecting too much. As noted, "accountability" does not demand a correct set of reasons appropriate for the claim or proposal in question, nor the provision of an explicit framework of rational evaluation, rather, it demands that claims or proposals are put forward in such a way as to allow for evidence-based evaluation in the first place. So to speak of "epistemic values" without qualification at all would be misleading insofar as it is not truth-conduciveness as such (which epistemic values are typically defined in terms of) that characterizes whatever fulfills this role of "inner link," but that it makes possible the rational evaluability of the theses or the estimability of functional adequacy of the proposals put forth in the first place.

49. What they would have objected to is the manifesto's "hijacking" of this point seemingly exclusively for the socialist opposition to the rising tide of Austro-fascism and German Nazism, but, again, that is another matter.

all norms only the epistemic ones. But it is, because of it, however eccentric such a division may appear, by no means removed from practical consequences. The manifesto gave clear expression to its authors' recognition of this very fact not once but twice on its concluding pages. It affirmed in general that "the intellectual tools of modern empiricism are to be developed, tools that are needed also in forming public and private life", and then enjoined colleagues and sympathizers that "we have to fashion intellectual tools for everyday life, for the daily life of the scholar but also for the daily life of all those who in some way join in working at the conscious reshaping of life" (Carnap, Hahn, and Neurath ([1928] 2012, p. 81). It was an essential part of the Circle's modernist enlightenment ethos to demand the transparency of claims and the readiness to give arguments in support of them not only in the study or lecture hall, but also in the public and civic domain.⁵⁰

It was in trying to do justice to this demand for accountability that even Neurath's theory of socialization made common cause with the principle underlying the Viennese philosophies of science. It was not the material content of the attempted improvement of social conditions, but the formal aspect of clear and intersubjectively reconstructable argumentation, the presentation of intelligible reasons for undertaking the social interventions in question, that makes for what they share. To recognize this it is not necessary that we must "politicize" all members of the Circle or even, absurdly, turn them all into supporters of Neurath's radical program. Rather, it is in the insistence on the norm of intersubjective accountability, applied to reasons for social action by certain transformative movements, that the "inner kinship" with the philosophies of science of the Vienna Circle consisted. And it is in their recognition of this "link" generally— independently of Neurath's and Carnap's particular politics which in the 1930s no longer featured as prominently, if at all, in their philosophical writings—that the neglected social and political relevance of the modernist philosophies of logical empiricism lies.

It was not only the fact that the norm of intersubjective accountability was articulated in such soon-to-be extreme circumstances that rendered it socio-political. It hardly needs adding that the norm of intersubjective accountability has undiminished relevance in our self-consciously post-modern times—nor that, closer to home, more theoretical investigation is needed into this norm that, bordering on the ethical, seem presupposed

50. On the demand for transparency as a distinguishing feature of the Vienna Circle's "modernism"—albeit without the foundationalist framework attributed to it—see also Galison (1990). That the norm of intersubjective accountability resonates with the characteristics of the scientific world-conception should occasion no surprise either: what it does is crystallize in a theoretical notion what Romizi (2012) detected as elements in a practical stance.

by all rational discourse.⁵¹ But whatever its ultimate status or nature, what I hope to have established already here is that the norm of intersubjective accountability was invoked by theorists of the Vienna Circle as a matter of historical fact.

References

- Austin, J. L. [1946] 1979. "Other Minds." *Proceedings of the Aristotelian Society* Suppl. 20: 148–187. Repr. pp. 79–116 in Austin, *Philosophical Papers*. Edited by J. O. Urmson and G. J. Warnock. 3rd edition. Oxford: Oxford University Press.
- Bailin, S., and M. Battersby. 2016. "Fostering the Virtues of Inquiry." *Topoi* 35: 367–374.
- Burke, C., E. Kindel, and S. Walker (eds.). 2013. *ISOTYPE: Design and Contexts*. London: Hyphen.
- Cangiani, M.. 2006. "From Menger to Polanyi: Towards a Substantive Economic Theory." *Keizaigkuschki-Kenkyu* (The History of Economic Thought) 48: 1–15.
- Carnap, R. [1928] 1967. *The Logical Structure of the World*. Berkeley: University of California Press. Translation of *Der logische Aufbau der Welt*. Berlin: Weltkreisverlag.
- Carnap, R. [1932] 1959. The Elimination of Metaphysics through Logical Analysis of Language. Pp. 60–81 in *Logical Positivism*. Edited by A. J. Ayer. New York: The Free Press. Translation of "Überwindung der Metaphysik durch logische Analyse der Sprache." *Erkenntnis* 2: 219–241.
- Carnap, R. [1934a] 1937. *The Logical Syntax of Language*. London: Kegan, Paul, Trench Teubner & Cie. Translation of *Logische Syntax der Sprache*. Vienna: Springer.

51. How much further insight can be extracted from this apparent truism? It may be noted that contemporary argumentation theory (see, e.g., van Eemeren et al. 2015) does not seem to expend much reflection on the admittedly broad norm of intersubjective accountability. The reason would appear to be not dissent from the norm but rather that the norm is taken for granted in any argumentation with any pretense to rationality. Argumentation theory's recent turn to "virtues of inquiry" gets close with its attention to the conditions required to have a "community of inquiry," but does not topicalize this norm specifically (see Bailin and Battersby 2016)—nor does Dewey's foundational investigation of inquiry do so ([1938] 1991, Part 1 and Ch. 6). Likewise, the norm of intersubjective accountability seems to be presupposed and only specific aspects that follow from it are explicated in Grice's theory of conversational implicatures (1975) or Sperber and Wilson's relevance theory (1986); for a survey see Davis ([2005] 2019). On the other hand, the norm of intersubjective accountability appears to share central concerns with the complex of attitudes and disposition that Bernard Williams discussed under the term "truthfulness" (2002). The nature and extent of this overlap and points of agreement and difference with neopragmatist and critical theory conceptions must be considered on another occasion.

- Carnap, R. [1934b] 2013. Theoretische Fragen und praktische Entscheidungen. Pp. 175–179 in *Der Wiener Kreis. Ausgewählte Texte*. Edited by C. Damböck. Stuttgart: Reclam. Original publication in *Natur und Geist* 2: 257–260.
- Carnap, R. 1963. Intellectual Autobiography and Comments and Replies. Pp. 3–84 and 859–1016 in *The Philosophy of Rudolf Carnap*. Edited by P. A. Schilpp. LaSalle, Ind.: Open Court.
- Carnap, R., H. Hahn, and O. Neurath. [1928] 2012. The Scientific World-Conception. The Vienna Circle. Pp. 75–116 in *Wissenschaftliche Weltauffassung. Der Wiener Kreis. Hrsg. vom Verein Ernst Mach (1929)*. Edited by F. Stadler and T. Uebel. Vienna: Springer.
- Cartwright, N., J. Cat, L. Fleck, and T. Uebel. 1996. *Otto Neurath: Philosophy Between Science and Politics*. Cambridge: Cambridge University Press.
- Carus, A. 2007. *Carnap and Twentieth-Century Thought: Explication as Enlightenment*. Cambridge: University of Cambridge Press.
- Chaloupek, G. K. 1990. “The Austrian Debate on Economic Calculation in a Socialist Economy.” *History of Political Economy* 22: 659–675.
- Dahms, H.-J. 1994. *Positivismusstreit. Die Auseinandersetzungen der Frankfurter Schule mit dem logischen Empirismus, dem amerikanischen Pragmatismus und dem kritischen Rationalismus*. Frankfurt: Suhrkamp.
- Danneberg, L. 1998. Logischer Empirismus in den Zwanziger und Dreissiger Jahren. Pp. 109–138 in *Hans Reichenbach. Philosophie im Umkreis der Physik*. Edited by H. Poser and U. Dirks. Berlin: de Gruyter.
- Damböck, C., and Werner, H., (eds.). 2020. *Logischer Empirismus, Lebensreform und die deutsche Jugendbewegung*. Cham: Springer.
- Davis, W. [2005] 2014. “Implicature.” *Stanford Encyclopedia of Philosophy*. <http://plato.stanford.edu/archives/fall2019/entries/implicature>
- Dewey, J. [1938] 1991. *Logic: The Theory of Inquiry*. New York. Repr. Carbondale: Southern Illinois University Press.
- Dingler, H. 1933. *Die Grundlagen der Geometrie. Ihre Bedeutung für Philosophie, Mathematik, Physik und Technik*. Stuttgart: Enke.
- Eemeren, F. A. van, et al. 2015. *Handbook of Argumentation Theory*. Dordrecht: Springer.
- Feigl, H. [1943] 1949. Logical Empiricism. Pp. 371–415 in *Twentieth Century Philosophy*. Edited by D. Runes. New York: Philosophical Library. Excerpts repr. pp. 3–26 in *Readings in Philosophical Analysis*. Edited by H. Feigl and W. Sellars. New York: Century-Appleton-Croft.
- Galison, P. 1990. “Aufbau/Bauhaus: Logical Positivism and Architectural Modernism.” *Critical Inquiry* 16: 709–752.
- Grice, P. 1975. Logic and Conversation. Pp. 41–58 in *Syntax and Semantics 3: Speech Acts*. Edited by P. Cole and J. Morgan. New York: Academic Press. Repr. pp. 22–40 in Grice, *Studies in the Way of Words*, Cambridge: Harvard University Press, 1990.

- Habermas, J. [1967] 1972. *Knowledge and Human Interests*. London: Heinemann. Translation of *Erkenntnis und Interesse*. Frankfurt: Suhrkamp.
- Haller, R. [1985] 1991. The First Vienna Circle. Pp. 95–108 in *Rediscovering the Forgotten Vienna Circle*. Edited by T. Uebel. Dordrecht: Kluwer. Translation of “Der erste Wiener Kreis.” *Erkenntnis* 22: 341–358.
- Hayek, F. v. [1933–36] 1950. Carl Menger. Pp. 11–36 in C. Menger, *Principles of Economics*. Gleece, Ill.: University of Illinois Press. Reprint of pp. v–xxxviii in C. Menger, *Collected Works* (Reprints of Scarce Tracts in Economic and Political Science, nos. 17–20). London: London School of Economics.
- Hayek, F. v. (ed.) 1935. *Collectivist Economic Planning. Critical Studies of the Possibility of Socialism*. London: Routledge and Sons.
- Hayek, F. v. [1940] 1948. “[Socialist Calculation III:] The Competitive Solution.” *Economica* 7. Repr. pp. 181–208 in Hayek 1948.
- Hayek, F. v. [1945] 1948. “The Use of Knowledge in Society.” *American Economic Review* 35: 519–530. Repr. pp. 77–91 in Hayek 1948.
- Hayek, F. v. 1948. *Individualism and Economic Order*. Chicago: University of Chicago Press.
- Hegselmann, R. 1979. Otto Neurath—Empiristischer Aufklärer und Sozialreformer. Pp. 7–77 in O. Neurath, *Wissenschaftliche Weltanschauung, Sozialismus und Logischer Empirismus*. Edited by R. Hegselmann. Frankfurt: Suhrkamp.
- Horkheimer, M. [1937] 1972. The Latest Attack on Metaphysics. Pp. 132–187 in *Critical Theory*. New York: Seabury Press. Translation of “Der neueste Angriff auf die Metaphysik.” *Zeitschrift für Sozialforschung* 6: 4–51.
- Howard, D. 2006. The Lost Wanderers in the Forest of Knowledge: Some Thoughts on the Discovery-Justification Distinction. Pp. 3–22 in *Reconsidering Discovery and Justification*. Edited by J. Schickore and F. Steinle. Dordrecht: Springer.
- Howard, D. 2009. “Better Red than Dead—Putting an End to the Social Irrelevance of Postwar Philosophy of Science.” *Science & Education* 18: 199–220.
- Hoyningen-Huene, P. 1987. “Context of Discovery and Context of Justification.” *Studies in the History and Philosophy of Science* 18: 501–515.
- Kamlah, A. 2013. Everybody has the Right to Do What He Wants. Hans Reichenbach’s Voluntarism and its Historical Roots. Pp. 151–178 in *The Berlin Group and the Philosophy of Logical Empiricism*. Edited by N. Milkov and V. Peckhaus. Springer: Dordrecht.
- Kluge, U. 1985. *Die deutsche Revolution 1918/1919*. Frankfurt: Suhrkamp.
- Lavoie, D. 1985. *Rivalry and Central Planning. The Socialist Calculation Debate Reconsidered*. Cambridge: Cambridge University Press.

- Leonard, Robert. 2010. *Von Neumann, Morgenstern, and the Creation of Game Theory. From Chess to Social Science, 1900–1960*. Cambridge: Cambridge University Press.
- Martinez-Alier, J. 1987. *Ecological Economics: Energy, Environment and Society*. Oxford: Blackwell.
- Menger, C. 1923. *Grundsätze der Volkswirtschaftslehre*. Second edition. Edited by K. Menger. Vienna: Hölder-Pichler-Tempsky. Repr. Aalen: Scientia, 1968.
- Menger, K. [1934] 1974. *Morality, Decision and Social Organization*. Dordrecht: Reidel. Translation of *Moral, Wille und Weltgestaltung*. Vienna: Springer.
- Mises, L. v. [1920] 1935. Economic Calculation in the Socialist Commonwealth. Pp. 89–130 in *Collectivist Economic Planning. Critical Studies of the Possibility of Socialism*. Edited by F. v. Hayek. London: Routledge and Sons. Translation of “Die Wirtschaftsrechnung im sozialistischen Gemeinwesen.” *Archiv für Sozialwissenschaft* 47: 86–121.
- Mises, L. v. [1922] 1951. *Socialism: An Economic and Sociological Analysis*. New Haven: Yale University Press. *Die Gemeinwirtschaft. Untersuchungen über den Sozialismus*, Jena: Fischer. Second rev. ed. 1932. Trans. Repr. Indianapolis: Liberty Fund, 1981.
- Nemeth, E. 2019. Visualizing Relations in Society and Economics: Otto Neurath’s Isotype-Method against the Background of His Economic Thought. Pp. 117–140 in *Neurath Reconsidered: New Sources and Perspectives*. Edited by J. Cat and A. Tuboly. Cham: Springer.
- Neurath, O. [1910] 2004. On the Theory of Social Science. Pp. 265–291 in *Economic Writings. Selections 1904–1945*. Edited by T. Uebel and R. S. Cohen. Dordrecht: Kluwer. Translation of “Zur Theorie der Sozialwissenschaften.” *Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft im Deutschen Reich* 34: 37–67.
- Neurath, O. [1913] 2004. On the Role of Moral Value Judgments in Economic Science. Pp. 297–298 in *Economic Writings. Selections 1904–1945*. Edited by T. Uebel and R. S. Cohen. Dordrecht: Kluwer. Translation of “Zur Stellung des sittlichen Werturteils in der wissenschaftlichen Nationalökonomie.” Pp. 31–32 in *Äusserungen zur Werturteilsdiskussion im Ausschuss des Vereins für Sozialpolitik*. Private printing of Verein für Sozialpolitik.
- Neurath, O. [1917] 2004. The Conceptual Structure of Economic Theory and its Foundations. Pp. 312–342 in *Economic Writings. Selections 1904–1945*. Edited by T. Uebel and R. S. Cohen. Dordrecht: Kluwer. Translation of “Das Begriffsgebäude der Wirtschaftslehre und seine Grundlagen.” *Zeitschrift für die gesamte Staatswissenschaft* 73: 484–520.
- Neurath, O. 1919a. *Die Sozialisierung Sachsens. Drei Vorträge*. Chemnitz: Verlag des Arbeiter- und Soldatenrats im Industriebezirk Chemnitz.

- Neurath, O. [1919b] 2004. Character and Course of Socialization. Pp. 135–150 in *Empiricism and Sociology*. Edited by M. Neurath and R. S. Cohen. Dordrecht: Reidel. Translation of *Wesen und Weg der Sozialisierung. Gesellschaftliches Gutachten vor dem Münchner Arbeiterrat*. Munich: Callwey.
- Neurath, O. [1919c] 1973. Utopia as a Social Engineer's Construction. Pp. 150–155 in *Empiricism and Sociology*. Edited by M. Neurath and R. S. Cohen. Dordrecht: Reidel. Translation of "Die Utopie als gesellschaftstechnische Konstruktion." Pp. 228–231 in Neurath *Durch die Kriegswirtschaft zur Naturalwirtschaft*. Munich: Callwey.
- Neurath, O. [1920a] 2004. A System of Socialization. Pp. 345–370 in *Economic Writing. Selections 1904–1945*. Edited by T. Uebel and R. S. Cohen. Dordrecht: Kluwer. Translation of "Ein System der Sozialisierung." *Archiv für Sozialwissenschaft und Sozialpolitik* 48: 44–73.
- Neurath, O. [1920b] 2004. Total Socialization. Pp. 371–404 in *Economic Writings. Selections 1904–1945*. Edited by T. Uebel and R. S. Cohen. Dordrecht: Kluwer. Translation of *Vollsozialisierung*. Jena: Diederichs.
- Neurath, O. 1920c. *Vollsozialisierung und Arbeiterorganisation*. Reichenberg: Runge & Co.
- Neurath, O. 1921. *Betriebsräte, Fachräte, Kontrollrat und die Vorbereitung der Vollsozialisierung*. Berlin: Hoffmann.
- Neurath, O. [1925a] 2004. Economic Plan and Calculation in Kind. *Economic Writings. Selections 1904–1915*. Edited by T. Uebel and R. S. Cohen. Dordrecht: Kluwer. Translation of *Wirtschaftsplan und Naturalrechnung*. Berlin: Laub.
- Neurath, O. [1925b] 2004. Socialist Utility Calculation and Capitalist Profit Calculation. Pp. 466–472 in *Economic Writings. Selections 1904–1945*. Edited by T. Uebel and R. S. Cohen. Dordrecht: Kluwer.
- Neurath, O. [1931] 2004. Empirical Sociology. Pp. 319–421 in *Empiricism and Sociology*. Edited by M. Neurath and R. S. Cohen. Dordrecht: Reidel. Translation of *Empirische Soziologie*. Vienna: Springer.
- Neurath, O. [1932a] 1983. Sociology in the Framework of Physicalism. Pp. 58–90 in *Philosophical Papers 1913–1946*. Edited by R. S. Cohen and M. Neurath. Dordrecht: Reidel. Translation of "Soziologie im Physikalismus." *Erkenntnis*: 393–431.
- Neurath, O. [1932b] 1983. Protocol Sentences. Pp. 91–99 in *Philosophical Papers 1913–1946*. Edited by R. S. Cohen and M. Neurath. Dordrecht: Reidel. Translation of "Protokollsätze." *Erkenntnis* 3: 204–214.
- Neurath, O. 1932c. "Jungfrontaktion und Bildungsarbeit (Aus einem Referat für Jungfrontfunktionäre)." *Bildungsarbeit* 19: 163–169.
- Neurath, O. 1933. "Museums of the Future." *Survey Graphic* 22: 458–463.
- Neurath, O. [1935] 1987. What Is Meant by Rational Economic Theory? Pp. 67–109 in *Unified Science*. Edited by B. McGuinness. Dordrecht:

- Kluwer. Translation of *Was bedeutet rationale Wirtschaftsbetrachtung?* Vienna: Wolf.
- Neurath, O. [1936] 1981. *Le développement de Cercle de Vienne et l'avenir de l'empirisme logique*. Paris: Hermann & Cie. Translation of "Die Entwicklung des Wiener Kreises und die Zukunft des Logischen Empirismus," pp. 673–709 in O. Neurath, *Gesammelte philosophische und methodologische Schriften*. Edited by R. Haller and H. Rutte. Vienna: Hölder-Pichler-Tempsky.
- Neurath, O. [1937a] 2004. "Inventory of the Standard of Living." *Zeitschrift für Sozialforschung* 6: 140–51. Repr. pp. 513–526 in *Economic Writings. Selections 1904–1945*. Edited by T. Uebel and R. S. Cohen. Dordrecht: Kluwer.
- Neurath, O. [1937b] 2011. Unity of Science and Logical Empiricism: A Reply. Pp. 15–30 in *Otto Neurath and the Unity of Science*. Edited by J. Symons, O. Pombo, and J. M. Torres. Dordrecht: Springer. Translation of "Einheitswissenschaft und logischer Empirismus. Eine Erwiderung." In *Otto Neurath Nachlass, Wiener Kreis Archief, Noord-Hollands Archief*, Haarlem, The Netherlands.
- Neurath, O. 1944. *Foundations of the Social Sciences*. Chicago: University of Chicago Press.
- Neurath, O., and W. Schumann. 1919a. *Können wir heute sozialisieren? Eine Darstellung der sozialistischen Lebensordnung und ihres Werdens*. Leipzig: Klinkhardt.
- Neurath, O., and W. Schumann. 1919b. "Entwurf eines Sozialisierungsgesetzes." *Dresdener Anzeiger*, No. 73, 15 March. Repr. in Appendix of K. Bücher, *Die Sozialisierung*, Tübingen: Laupp, 2nd ed. 1920.
- Neurath, P. 1994. Otto Neurath (1882–1945). Leben und Werk. Pp. 13–96 in *Otto Neurath oder die Einheit von Wissenschaft und Gesellschaft*. Edited by P. Neurath and E. Nemeth. Vienna: Böhlau.
- Neurath, P., and E. Nemeth (eds.). 1994. *Otto Neurath oder die Einheit von Wissenschaft und Gesellschaft*. Vienna: Böhlau.
- Nielsen, C., and T. Uebel. 1999. Zwei Utopisten in einer gescheiterten Revolution. Otto Neurath and Gustav Landauer im Vergleich. Pp. 62–95 in *Otto Neurath: Rationalität, Planung, Vielfalt*. Edited by E. Nemeth and E. Heinrich. Vienna: Oldenbourg.
- O'Neill, J., and T. Uebel. 2004. "Horkheimer and Neurath: Restarting a Disrupted Debate." *European Journal of Philosophy* 12: 75–105.
- O'Neill, J., and T. Uebel. 2014. Analytical Philosophy and Ecological Economics. Pp. 48–73 in *Handbook of Ecological Economics*. Edited by J. Martinez-Alier and R. Muradian. Cheltenham: Elgar.
- Reichenbach, H. 1934. "In eigener Sache." *Erkenntnis* 4: 75–78.
- Reichenbach, H. 1951. *The Rise of Scientific Philosophy*. Berkeley: University of California Press.

- Reisch, G. 2005. *How the Cold War Transformed Philosophy of Science: To the Icy Slopes of Logic*. Cambridge: Cambridge University Press.
- Richardson, S. 2009. "The Left Vienna Circle." *Studies in History and Philosophy of Science* 40: 14–24, 167–174.
- Romizi, R. 2012. "The Vienna Circle's 'Scientific World-Conception': Philosophy of Science in a Political Arena." *HOPPOS* 2: 205–242.
- Sandner, G. 2014. *Otto Neurath. Eine politische Biographie*. Vienna: Zsolnay.
- Schäffle, A. 1875. *Die Quintessenz des Sozialismus*. Gotha: Perthes. Trans. *The Quintessence of Socialism*, London: Sonnenschein, 1892.
- Schuster, C. 1978. UCLA, 1945–1950. Pp. 55–58 in H. Reichenbach, *Selected Writings, 1909–1953, Vol. 1*. Edited by M. Reichenbach and R. S. Cohen. Dordrecht: Reidel.
- Sellars, W., [1956] 1997. Empiricism and the Philosophy of Mind. Pp. 253–329 in *The Foundations of Science and the Concepts of Psychology and Psychoanalysis*. Edited by H. Feigl and U. M. Scriven. Minneapolis: Univ. of Minnesota Press. Repr. in Sellars, *Empiricism and the Philosophy of Mind*. Edited by R. Brandom. Cambridge, Mass.: Harvard University Press.
- Siegetsleitner, A. 2014. *Ethik und Moral im Wiener Kreis*. Vienna: Böhlau.
- Sperber, D., and D. Wilson 1986. *Relevance: Communication and Cognition*. Oxford: Blackwell.
- Stadler, F. [1997] 2015. *The Vienna Circle: Studies in the Origins, Development, and Influence of Logical Empiricism*. Trans. and Ed. F. Stadler. Dordrecht: Springer.
- Steel, D. 2010. "Epistemic Values and the Argument from Inductive Risk." *Philosophy of Science* 77: 14–34.
- Steele, D. 1992. *From Marx to Mises. Post-Capitalist Society and the Challenge of Economic Calculation*. La Salle, Ill.: Open Court.
- Ströbel, H. [1921] 1922. *Socialisation in Theory and Practice*. London: King and Son. Translation of *Die Sozialisierung, ihre Wege und Voraussetzungen*. Berlin: Der Firm.
- Tuboly, A. T. 2017. Carnap's Weltanschauung and the Jugendbewegung. The Story of an Omitted Chapter. Pp. 129–144 in *Integrated History and Philosophy of Science*. Edited by F. Stadler. Dordrecht: Springer.
- Uebel, T. 1995. "Otto Neurath's Idealist Inheritance: The Social and Economic Thought of Wilhelm Neurath." *Synthese* 103: 87–121.
- Uebel, T. 1996. The Enlightenment Ambition of Epistemic Utopianism: Otto Neurath's Theory of Science in a Historical Perspective. Pp. 91–112 in *Origins of Logical Empiricism*. Edited by R. Giere and A. Richardson. Minneapolis: University of Minnesota Press.
- Uebel, T. 2000a. *Vernunftkritik und Wissenschaft. Otto Neurath und der erste Wiener Kreis*. Vienna: Springer.
- Uebel, T. 2000b. "Logical Empiricism and the Sociology of Knowledge: The Case of Neurath and Frank." *Philosophy of Science* 67: S138–S150.

- Uebel, T. 2004a. Introduction: Neurath's Economics in Critical Context. Pp. 1–107 in *Economic Writings. Selections 1904–1945*. Edited by T. Uebel and R. S. Cohen. Dordrecht: Kluwer.
- Uebel, T. 2004b. "Education, Enlightenment and Positivism: The Vienna Circle's Scientific World-Conception Revisited." *Science & Education* 13: 41–66.
- Uebel, T. 2005a. "Political Philosophy of Science in Logical Empiricism: The Left Vienna Circle." *Studies in History and Philosophy of Science* 36: 754–773.
- Uebel, T. 2005b. "Incommensurability, Ecology and Planning. Neurath in the Socialist Calculation Debate." *History of Political Economy* 37: 309–342.
- Uebel, T. 2007. *Empiricism at the Crossroads. The Vienna Circle's Protocol-Sentence Debate*. Chicago: Open Court.
- Uebel, T. 2008a. "Calculation in Kind and Marketless Socialism. On Otto Neurath's Utopian Economics." *European Journal for the History of Economic Thought* 15: 475–501.
- Uebel, T. 2008b. "Writing a Revolution: On the Production and Early Reception of the Vienna Circle's Manifesto." *Perspectives on Science* 16: 70–102.
- Uebel, T. 2010. "What's Right About the Left Vienna Circle Thesis. A Refutation." *Studies in History and Philosophy of Science* 41: 214–221.
- Weber, M. [1904] 1949. "Objectivity" in Social Science and Social Policy. Pp. 49–112 in *The Methodology of the Social Sciences*. Edited by E. A. Shils. New York: The Free Press. Translation of "Die 'Objektivität' sozialwissenschaftlicher und sozialpolitischer Erkenntnis." *Archiv für Sozialwissenschaft und Sozialpolitik* 19.
- Weber, M. [1913] 1949. The Meaning of Ethical Neutrality. Pp. 1–47 in *The Methodology of the Social Sciences*. Edited by E. A. Shils. New York: The Free Press. Translation of "Der Sinn der 'Wertfreiheit' der soziologischen und ökonomischen Wissenschaften." Pp. 83–120 in *Äusserungen zur Werturteilsdiskussion im Ausschuss des Vereins für Sozialpolitik*. Private printing of Verein für Sozialpolitik. As revised in *Logos* 7 (1917) 40–88.
- Weber, M. 1921. *Gesammelte politische Schriften*. München: Drei Masken.
- Weissel, E. 1976. *Die Ohnmacht des Sieges. Arbeiterschaft und Sozialisierung nach dem Ersten Weltkrieg in Österreich*. Vienna: Europaverlag.
- Williams, B. 2002. *Truth and Truthfulness: An Essay in Genealogy*. Princeton: Princeton University Press.