

Incommensurability, Ecology, and Planning: Neurath in the Socialist Calculation Debate, 1919–1928

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The socialist calculation debate, taking place in the main from 1920 to the early 1940s and once widely thought to have been decided in favor of socialism, is nowadays held to have resulted in its defeat.¹ In light of this reevaluation, different antisocialist contributions to the debate have been investigated anew. Just how was Friedrich August von Hayek's argument related to Ludwig von Mises's, and who of the two landed the "fatal" blow? As a result, deeper layers of the typically "Austrian" argument against socialism were unearthed that tell against the neoclassical equilibrium assumptions of most of their opponents.² Here my purpose is to consider an early figure on the other side of the debate: Otto Neurath. Just as Mises's and Hayek's arguments are profitably disaggregated and then reassembled, so are, I will argue, the different stages of the position taken by Neurath. Neither the early anti- nor the early prosocialist positions were as simplistic as often suggested.

Sometimes credited as the author whose writings on the much-discussed socialization of the postwar economy, and whose advocacy of

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1. See Vaughn 1994 for a compressed account, Boettke 2002 for extensive documentation (including reprints of Neurath [1919] 1973a and of Hayek 1935a in its entirety with Mises [1920] 1935), and Desai 2002 for a prominent illustration of the change in evaluation of outcome.

2. See Boettke 1998 and the references therein to the preceding debate.

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a particularly radical version of it, prompted Mises's original article of 1920 (expanded into a book in 1922, with a second edition in 1931), Neurath has not fared very well in the estimation of subsequent contributors to the debate (if he has been mentioned at all). Hayek's 1935 claim in the introduction to his critical reader *Collectivist Economic Planning*, containing among others a translation of Mises's article, seems to have provided the blueprint:

Among these early socialist contributions to the discussions, in many ways the most interesting and in any case the most representative for the still very limited recognition of the nature of the economic problems involved, is a book by Dr. O. Neurath which appeared in 1919, in which the author tried to show that war experiences had shown that it was possible to dispense with any considerations of value in the administration of the supply of commodities and that all the calculation of the central planning authorities should and could be carried out *in natura*, i.e. that the calculations need not be carried through in terms of some common unit of value but that they could be made in kind. Neurath was quite oblivious of the insuperable difficulties which the absence of value calculations would put in the way of any rational economic use of the resources and even seemed to consider it an advantage. (1935b, 30–31)

Few have since bothered to check Hayek's characterization and judgment of Neurath's proposals as merely "important as [a] representative expression of socialist thought just before the impact of the new criticism" (31). Whether Neurath's proposals in fact had all that much support to begin with is unclear, but whatever support they had, it scattered soon. Antisocialists and most socialists alike took Neurath's ideas to have been refuted comprehensively and, if they hadn't done so already, moved the discussion to the then new and ever changing terrain of "market socialism."³

Of late, however, ecological economists and philosophers have rediscovered Neurath, challenging the standard interpretation.⁴ While previously one tended to laud Neurath, as Mises did, for the unflinching

3. This move, associated with the Anglo-American discussions from the late 1920s onward, had already been explored in a variety of ways in the German and Austrian debates of the early and mid-1920s. See Chaloupek 1990 for a rare discussion of this early part of the socialist calculation debate.

4. See, e.g., Martinez-Alier [1987] 1990, 1995; O'Neill 1993, 1998; and Martinez-Alier, Munda, and O'Neill 2001.

resolve with which he bit Marx's bullets, but also tended to find little joy in Neurath's rejection of market rationality, nowadays the estimation seems reversed. It is his critique of market rationality that is valued higher than his defense of marketless socialism. This suggests that the long presumed settled status of Neurath's argument for economic planning, its reach and plausibility, needs reassessment. What role, if any, does the ecological concern play in the planning argument? My purpose here is to advance, with reference to previously neglected sources, the interpretation of Neurath's position in the years before the socialist calculation debate was widely taken up in England and America in the 1930s. My concern is narrowly focused on Neurath's argument, its development and structure, and its content and validity. However interesting, the wider reaches of the socialist calculation debate beyond the Mises-Neurath exchange in the years indicated and its sociohistorical context must remain largely unconsidered here.⁵

1. The Standard Story Expanded: Mises vs. Neurath

Received wisdom has it that, apart from some mostly neglected precursors, the socialist calculation debate was initiated by Mises's article of 1920 claiming that rational economic thinking was impossible under socialism.⁶ While the goal of an immediate implementation of a market- and moneyless economy was also announced by the Bolsheviks in the early days of so-called war communism in very broad terms, it was Neurath's writings on how new forms of planned administrative economies were about to emerge from the German and Austro-Hungarian war experience that mainly prompted Mises's intervention.⁷ During World War

5. Besides a couple of anachronistic side-glances, Hayek's argumentation and Mises's restatements in *Human Action* must be neglected here—as must be the fascinating prehistory of the Neurath-Mises argument.

6. For a sketchy (and partial) outline of the prehistory, see the first footnote of a section of Mises's *Socialism* that was entirely rewritten for the second edition in 1932 ([1922] 1951, 135). The content of this note was further expanded in Hayek 1935b, 24–27, and partly documented by the translation of articles by Pierson and Barone later in that same volume.

7. See Neurath 1919a for his commonly cited collection of writings on war and administrative economics from 1909 onward, including the reprint of his address to the Munich Workers' and Soldiers' Council in January 1919 that first outlined his conception of socialization ([1919] 1973a). By contrast, Nikolai Bukharin and E. Preobrazhensky's *The ABC of Communism* ([1920] 1922) remained much more unspecific about the nature of the marketless economy.

I planned production for perceived need was seen to have replaced production for profit alone; what if the goal set by war aims was replaced by the goal of satisfying the needs of the population in peacetime?

Expressed in simplest terms (we will see detailed examples below), Neurath's "planning argument" of 1919 says that the dysfunctional "anarchy" of the market can be overcome by a "planned economy." Now by rejecting the free market one rejects the organizing principle of production for profit and thus the "rule of money." In its place Neurath argued for what he called "calculation in kind," "economy in kind," and the introduction of an "economic plan": an economy the direction of which was determined by the satisfaction of social need calculated *in natura*.

In a large-scale economy in kind, in a socialised economy, money no longer is a driving force. No longer is there a "net profit" for which production occurs. Money could remain at best as a token for a claim on all sorts of goods and services which the individual consumer is given to enable him to arrange his consumption. . . . There are no units that can be used as the basis of such a [production] decision, neither units of money nor hours of work. One must directly judge the desirability of the two possibilities. To many it seems impossible to proceed in this manner, and yet it is only in this field that we are not used to it. For even in the past one has not started from units of teaching or sickness in order to decide whether new schools or hospitals should be built; rather one directly set over against one another, even if only at general outlines, the totality of changes caused by schools and those caused by hospitals. ([1919] 1973a, 145–46)

Of course, it was not just calculation in units of specific goods or services that was at issue but any universally applicable unit of a means of measurement.⁸ It was the incommensurability of the values involved that called for calculation in kind.

The replacement of capitalist profit calculation with socialist utility calculation required, Neurath stressed, the development of a new and comprehensively organized form of statistics in kind. It had to assess, on the one hand, the social need in food, housing, clothing, health and education provision, and other similar items, *in natura* and, on the other hand, it had to assess, again in specific quantities, the available or

8. This type of omission is not uncommon in Neurath's expositions; since in other places (e.g., 1922a, 23) the point is immediately added that neutral units of exchange are at issue, we may take it that it was implicit all along.

required raw materials and machinery and so forth, as well as the amounts of labor it would take to transform the raw materials into the desired goods, etc. On the basis of such a “universal statistics,” a variety of economic plans were then to be drawn up that specified what social needs could be satisfied at what cost in terms of other social needs remaining unsatisfied etc. It was up to the populace to choose, either directly or through its representatives, which of the plans was to be implemented.

Mises’s counterargument is easily misunderstood. Mises started by pointing out that use values were subjective and did not allow for an objective measure of the economic efficiency of actions (or at least not one that was to be intersubjectively intelligible) and so did not allow for the appropriate coordination of individuals’ actions. Such a measure was only afforded by money prices for goods and services. Since he also assumed it to be the essence of economic thinking to maximize the utility of expended effort, Mises is easily seen to have argued that without a commensurate cardinal measure of value like money, rational economic calculation was impossible. Since socialism precluded markets and money, it rendered rational economic calculation impossible.

Against this it is immediately and rightly objected that it is often possible to make rational decisions about how to direct one’s expenditure of effort even if no exact commensurate measure is available but only comparative assessments of the satisfaction of incommensurable values can be attempted, however vague. (This was, in fact, a standard line of Neurath’s in arguing for the possibility of an economic plan.) Against this counter, Mises had no argument, but he had never intended to dispute the point.

Mises’s argument was rather that the distinction between lower- and higher-order goods, between consumption and production goods, is of crucial importance here. Concerning lower-order, consumption goods it was indeed possible to arrive at a reasoned judgment concerning the merit of their relative utility by ranking and comparing them with the effort required for their procurement without reference to a neutral measure like money. Mises’s point concerned higher-order, production goods: modern capitalist economies are simply too complex to allow the economical use of production goods to be assessed in terms directly related to the use-values of consumption goods.

Calculation *in natura*, in an economy without exchange, can embrace consumption-goods only; it completely fails when it comes to deal

with goods of a higher order. And as soon as one gives up the conception of freely established monetary price for goods of a higher order, rational production becomes completely impossible. Every step that takes us away from private ownership of the means of production and from the use of money also takes us away from rational economics. ([1920] 1935, 104; cf. [1922] 1951, 119)

Once the relevance of the distinction between consumption and production goods was observed for the issue of economic planning, nothing seemed easier than to point out—as Max Weber ([1921] 1978, 103) did as well—that Neurath’s plans only make sense within the circumference of a more or less directly surveyable household economy. Rational calculation in modern capitalist economies required the medium of a universally commensurate measure: money. Since without a market, it is meaningless to speak of prices, what is needed therefore is a market in production goods—just what socialism precludes.

Still before Mises’s counter was published in 1920, Neurath had published or submitted for publication his own plans in numerous other places.⁹ His response to Mises’s objection therefore remained opaque for some time. Did he not realize its force or simply disdain to answer it? Neurath kept his readers guessing.¹⁰

For example, in 1921 Neurath rejected the demand that rent for public housing should stand in some dependence to the cost of building it. What’s “socialist” here was that the cost-benefit analysis needed to “equal out” only at the level of the economy as a whole (1921, 213).

9. See, e.g., Neurath 1919c, 1919b, [1920] 2004a, and [1920] 2004b.

10. The related puzzle of the dating of some of Neurath’s return engagements can now be laid to rest. Even though Mises is never mentioned nor his criticism alluded to, it has long remained unclear whether Neurath’s own “System of Socialisation” ([1920] 2004a), which was originally published in volume 48 of *Archiv für Sozialwissenschaft und Sozialpolitik*, was written after and intended to respond obliquely to Mises’s criticisms, which were published in the previous volume of the *Archiv*. That its contents show considerable overlap with “Total Socialisation” ([1920] 2004b), the preface of which was dated “April 1919,” is not decisive. A better answer can now be provided. The outside front covers of the issues making up volumes 47 and 48 of *Archiv* (both are dated “1920/1921”) reveal that they more or less “were published in parallel”: issue 47.1 (containing Mises) in April 1920, issue 48.1 (containing Neurath) in August 1920, issue 47.2 in January 1921, issue 47.3 in August 1921, and issue 48.3 in December 1921 (only issue 48.2 contained no indication of its precise date of publication). This might still allow for some very quick work by Neurath. However, the inside front cover of issue 47.1 (containing Mises) previewed the table of contents of issue 48.1 (including Neurath) as about to be published next. This establishes fairly conclusively that Neurath’s paper was submitted and accepted for publication by the time Mises’s paper was published (and may even have been received around the same time).

That, of course, presupposes a measure other than monetary units by means of which the overall gain can be determined to equal out the expenditure incurred. Socialist economic rationality was not monetary in its conceptual structure, but wholly *in natura* such that a unique optimum was only predictable under very restrictive conditions; even so, material indicators display in their ensemble, *en silhouette*, the real-life conditions at issue. This was the overall economic balance that Neurath claimed can only be dealt with by rough estimates.

Clearly, this was no response to Mises. It was not until *Wirtschaftsplan und Naturalrechnung (Economic Planning and Calculation In Kind)*, a small book of 1925, that Neurath attempted to confront his challenge directly. He began by noting that

even the most eager defenders of this point of view [that “money calculation could serve as a basis for a judgement of economic efficiency”] usually have to admit at some point or other that money calculation is not always the highest authority to pronounce judgement on social economic efficiency. Thereby they concede that even for them there exists another highest authority according to whose judgement in certain cases money calculation cannot be used. ([1925] 2004a, 427–28)

Mises ([1922] 1951, 389) himself admitted that cases where a certain part of the production of monopoly goods is destroyed in order to keep prices up are cases that “reduce welfare.” Since, therefore, “Mises admits a concept of wealth separate from the money calculation, to which he appeals,” Neurath ([1925] 2004a, 429) concluded: “If, in the case of monopoly, according to Mises, there is a calculation of wealth by which one can judge money calculation, then it should always be available and allow judgement on all economic processes” (*italics dropped*).

Note that Neurath was far from triumphal. He “conceded” that in socialism “there is no generally valid measure” of, in Mises’s words, what is “good” and what is “evil” in a given case of deciding production goals. At least, however, “in the socialist economy production and distribution can be decided according to a plan, and each decision, whether it increases or decreases wealth, can correspond in any case to the will of those concerned” (429). While the decisions are not determined by an objective measure, in this way the economy is still subjected to conscious direction for the social good. Thus Neurath stressed again that “these ‘decreases’ and ‘increases’ of [in-kind] wealth cannot be found so

easily—e.g. if certain groups of the population undergo improvements in their conditions of life and others simultaneously suffer a deterioration in theirs—but . . . a socialist economy can take decisions even if one final sum cannot be found” (430; italics dropped). Calculation in kind is far from equivalent to money calculation, Neurath admitted, but it can still usefully be employed to make rational economic decisions in a socialist commonwealth.

Certainly, Neurath was able to demonstrate that “in some cases” Mises too employed something like calculation in kind. But was that enough to establish that it could always be employed? Not surprisingly, Mises’s (1928, 188) response was scathing.

Otto Neurath has published another book dealing with calculation in kind. In it he reaffirms his often rehearsed belief in calculation in kind, a belief with which, one may note, he stands alone after all. Neurath too prefers to speak of many other things than calculation in kind, reasonably enough so since he has nothing new to offer in solution of the problem of adding apples and pears. Of course it is correct, as Neurath noted, that two concrete quantities of different types of goods can be compared with each other and that one can be designated as more, the other as less valuable. That was never in dispute, but has nothing whatsoever to do with the question of how to arrive at a summary calculation and confrontation of different types of goods and services.¹¹

Mises’s argument is fairly condensed. He denied that what he admitted in the case of monopoly goods must be admitted in other cases too, namely, that the utility of varying the production of different substitutable goods can be judged directly. Direct judgment was possible only for consumption goods in concrete cases—not when the utility of the entire stock of any old type of good or service was at issue. In short, Mises claimed that Neurath had failed to answer his criticism.¹²

Did Neurath even realize that it was the rational employment of production goods that was at issue? Later in his monograph he wrote:

As soon as there is no money accounting and therefore no balance sheet for individual enterprises, their technical efficiency must be

11. Translations from sources for which no translation is indicated in the bibliography are by the present author, as are insertions in square brackets (with phrases in quotation marks taken from adjacent paragraphs of the original).

12. Chaloupek 1990 seems to be the only place in the literature where this aftermath of the Mises-Neurath debate finds a mention. I have quoted the relevant paragraph from Mises 1928 above in full.

examined according to its significance for the total economy; that is only possible with reference to the economic plan. . . . Chemical factories are accustomed to prepare similar accounts about the chemicals they use and the chemicals they produce. It can be expected that technicians, in particular, will elaborate methods of calculation in kind, as soon as they have grasped the nature of these problems, and that they will help us to estimate the performance of individual enterprises as the basis for the study of economic efficiency. ([1925] 2004a, 445–46)

Neurath did believe that it would be possible to assess the efficiency of production goods in nonmonetary, namely “technical,” terms. What he seems to have had in mind is a comparative statistics establishing average yields, labor expenditure, and production times for given quantities of goods. “Calculation in kind can be applied . . . also to each work establishment, if only to make it possible to compare their ‘ways of working.’ This is a technical calculation which operates as exactly as possible with units of the most varied kind” (426). Neurath admitted that this amounted to an ongoing research program when he continued: “The present task is to create the foundations for such studies of moneyless economics. This is not easy” (446).

Neurath also remarked—as he had done before (e.g., [1919] 1973a, 145–46)—on what he considered areas in which in-kind calculation was long in use:

Yet rough estimates often suffice, as can be seen in the organisation of whole areas of life which also know no individual balance sheets in terms of common units of calculation. Think of the administration of public health, of security, of education. The performance of a school cannot be expressed by the balance account of this individual school. In a socialist economy an individual factory resembles an individual school, hospital, court of law. Whether a hospital achieves good or bad results in healing people can be estimated approximately; to assess its effect within the whole system of public health is much more difficult. (446)

To be sure, since the late nineteenth century German education policy had been driven by the perceived needs of the economy, as health and hygiene policy had been throughout Europe for some time. But did these sectors face the very same problems a moneyless economy faced? To start with, these were clearly demarcated areas reserved for the state to

deal with; as long as they remained embedded within a market economy, the means to achieve their goals carried a price it was thought worthwhile to be paid. Whether this kind of reasoning could be extended to the whole economy was just the issue.

As noted, Mises and his followers were not impressed. Neurath was counted among the participants of the early debate whom Hayek (1935b, 37) described as “those who thought that the loss of efficiency, the decline of general wealth which will be the effect of the absence of a means of rational calculation, would not be too high a price for the realisation of a more just distribution of this wealth.” We may note that, at the time, this was a somewhat tendentious way of putting the matter—Hayek himself admitted that his claim could not yet be proved and Neurath’s point was precisely that socialization allowed for the intentional underutilization of resources in capitalism to be overcome—but what in fact does Neurath’s argument in *Wirtschaftsplan und Naturalrechnung* establish? It does not contradict Mises’s position, which, after all, allowed for “non-economic values” to determine our actions, but only insisted that a market exist in production goods and labor so as to allow for economic calculation of contemplated ways of action.

That money calculation was not necessary for economic rationality, that no market was needed at all, does not follow from the mere fact that in some cases production decisions are undertaken for social need, not profit. Since this is obvious and yet Neurath held to both theses, interpreters must consider whether he thought on independent grounds that the rational employment of production goods could be ensured entirely by in-kind considerations. Let us call this idea the “strong in-kind calculability assumption.” It is to be distinguished from Neurath’s observation about how the goals are established around which decisions according to social need were taken. This—call it the “weak in-kind calculability assumption”—says that monetary calculation is not sufficient in all cases for rational economic decisions. By contrast, the strong in-kind calculability assumption says that alternative uses of production goods can be assessed as fully as is required for rational decision making by quantitative in-kind labor and production technology statistics—money calculation is not even necessary for rational economic decision making.

On the textual evidence so far we cannot conclude that Neurath mistakenly derived the possibility of a moneyless economy from the fact that money calculation is not ubiquitous in economic decisions. Rather, it appears that his strong in-kind calculability assumption traded on the

future achievement of a research program called “calculation in kind.” Despite the addition of Neurath’s true but inconsequential observation of the abuse of the market principle by the arbitrary factor of production pricing for transactions within large corporations (e.g., [1935] 1987, 94–95), this is about the best that can be done for Neurath’s planning argument on the extended traditional story.

2. The Alternative Story: Neurath as Ecologist

Let us now ask whether our survey of the arguments provided by Neurath is complete. It is significant that, for those who find him persuasive, Neurath’s better arguments against the rule of profit rationality turn not only on the existence of not-for-profit sectors of the economy or the arbitrariness in practice of factor-of-production pricing in large corporations, but also on the inability to calculate ecological cost due to inestimable intergenerational discounts and the like. This line of inquiry opens up a dimension of economic concern that so far has found little reflection in the calculation debate either in the views of the protagonists or in the considerations brought to bear by historians and critics.

Thus it is important to have noted—as Juan Martinez-Alier did in his review of the forgotten tradition of ecological economists—that Neurath packed ecological interests into the notion of a constructable utopia in 1919 and again into the notion of socialism in 1928 (in as much as ecological decisions are treated as representative of in-kind decisions taken by the socialist commonwealth). In addition, in 1931, Neurath is said to have suggested that “propositions about ‘productive forces’ should be converted into propositions about the flow of energy in agrarian and industrial production” (Martinez-Alier [1987] 1990, 234, 216, 227).

It is even more significant that Neurath explicitly asserted ecological reasonings in nearly exactly our contemporary form. Consider Martinez-Alier’s (1995, 74–75) own rejection of the practice of neoclassical environmental economists of “translat[ing] environmental values into money values” by nonmarket valuations like shadow pricing or contingent valuation:

Prices depend on the distribution of income and on the problematic allocation of property rights to items of “natural capital.” In the intergenerational context, the rate of discount needed to weigh future costs and benefits is very much in doubt. But ecological economics

goes beyond this criticism and poses the issue of incommensurability which should be squarely faced. . . . Incommensurability means that there is no common unit of measurement, but it does not mean that we cannot compare alternative decisions on a rational basis, on different scales of value, as in multi-criteria evaluation.

Martinez-Alier noted that this had long been Neurath's argument (also in [1987] 1990, xxi) and cited the following passage for Neurath's original insight:

The question may arise, should one protect coal mines or put greater strain on men? The answer depends for example on whether one thinks that hydraulic power may be sufficiently developed or that solar heat might come to be better used, etc. If one believes the latter, one may "spend" coal more freely and will hardly waste human effort where coal can be used. If however one is afraid that when one generation uses too much coal thousands will freeze to death in the future, one may well use more human power and save coal. Such and many other non-technical matters determine the choice of a technically calculable plan. We can see no possibility of reducing the production plan to some kind of unit and then compare the various plans in terms of such units. (Neurath [1928] 1973, 263)

Since this passage dates from 1928, however, skeptics may feel uncertain about Martinez-Alier's (1995, 71) claim that Neurath's argument dates from "the debate of the 1920s on economic calculus in a socialist economy," if only because by 1928 Neurath had mostly withdrawn from the debate.¹³ Was the ecological argument just an afterthought of Neurath's? If that were so, what role could it have played in his arguments for socialism and against capitalism? Precisely when did Neurath's incommensurability argument become an *ecological* incommensurability argument?

Does it help that Martinez-Alier ([1987] 1990, 234) also points out that for Neurath already in 1919 something like environmental sustainability—"live as happily as is allowed by the natural base" ([1919] 1973b, 154)—was part of "utopia as a social engineer's construction"?

13. There is also some unclarity in Martinez-Alier's dating of Neurath's ecological argument. First time around he dated it to 1928 (see page 216 of the hardback edition of his *Ecological Economics* [1987], where it was cited but not quoted), and thereafter twice to 1919, first on page xxi in the front matter of the paperback version of *Ecological Economics* [(1987) 1990], where only its content was reported, then again when he quoted the 1928 passage in full on page 75 of his 1995 article in the *New Left Review*.

It shows that already by then Neurath had taken on board the ecological dimension of the thought of Josef Popper-Lynkeus and Carl Ballod-Atlanticus.¹⁴ Sustainability issues were part of Neurath's concerns in the socialist calculation debate, however far in the background. Still, in order to make something of this fact, some amplification of his thoughts on these issues is needed. Moreover, it is one thing to be concerned about sustainability, another to argue that the relevant issues cannot be theorized by bringing environmental goods and services into the market on account of the incommensurability of the values involved. Only the latter works as an argument against Mises (if anything does).

When did Neurath hit upon this latter argument? A full version of this argument was already given in a short article of 1925 in *Der Kampf*, the theoretical journal of the Austrian social democratic party. In this article, as in his book later that year, Neurath addressed socialists who were prepared to accept Mises's argument of the need for a single commensurating unit, but in the article his argument was different. To begin with, note his concern, in setting out the economic plan, with the "non-wasteful" use of, importantly, nonrenewable resources:

The socialist economy, by contrast, is concerned with "utility," with the interest of the social whole and the welfare of all of its members with regard to housing, food, clothing, health, entertainment, etc. To this end it seeks to employ the given sources of raw materials, the extant machines and labour power etc. Right at the start it must be determined what this is, the "interest of the social whole." Does it include the prevention of the premature exhaustion of coal mines or of the karstification of the mountains or, for instance, of the health and strength of the next generation? Once that has been determined at least in outline, it makes sense to ask how the existing raw materials, machines, labour power etc. are best used. One has to find the best way to achieve a non-wasteful exploitation of the coal mines, to ensure the health of the next generation, etc. ([1925] 2004b, 468)

Clearly, explicitly transgenerational ecological concerns were important for Neurath's socialism by 1925. Yet what follows—did Neurath also furnish the crucible of his argument for socialism along these lines?

Subsequent to the paragraph last quoted, the article continued succinctly: "Now how can this 'best use' be calculated in a socialist economic order? For a socialist calculation there does not exist a unit of

14. For a discussion of their ideas, see Martinez-Alier 1987, chap. 13.

the sort which capitalism finds in ‘money.’” (468) To convince us of the good sense of his claim that commensuration by a single unit will not work, Neurath asked three rhetorical questions:

Some had the idea to introduce a certain amount of labour as a unit. But how could this make it possible for the excessive exploitation of a coal mine to figure as a negative entry in the balance? How could a quantity of electricity which a river provides us with be entered as an increase in amounts of labour units? Or the increase in wind power used in the running wind mills? (468)

Neurath here did not address the idea of labor units alone, but all candidates for that single commensurating unit: not only money, not only labor units, but any candidate for a universal value unit is meant to be ruled out.

Consider how ecological reasoning figures here. The first example trades on incommensurabilities of precisely the sort that environmental issues throw up: “the excessive exploitation of a coal mine” involves Martinez-Alier’s “intergenerational context” with the crucial problem of having to determine “the rate of discount needed to weigh future costs and benefits.” Inevitably, “we need a political decision, therefore, on the rate of discount and the time-horizon” (Martinez-Alier [1987] 1990, xxi). No objective facts are available that could determine this rate of discount.

Inasmuch as the second and third examples trade on incommensurabilities in assessing present-day but counterfactual costs and benefits, the argument seems weaker since merely the heterogeneity of values involved appears to be asserted. Why could shadow pricing not work here? The reasoning, however, is similar: here, too, shadow pricing requires a political decision about the value of the type of labor at issue and, more generally, a hierarchy of needs. However, such an assignment of value to labor is not objectively determined, nor is there anything timeless about the hierarchy of needs. The economic plans address what are held to be pressing social needs, but such considerations of need are sensitive in part also to ecological history.

Take the example of a company taking over the cutting of trees in a forest: tools will be worn out and human beings will be used to deliver wood for the social whole. How should one calculate whether the amount of wood delivered is “equivalent” to the tools and the labour

power used? Further: if such a calculation would be possible and if it showed that 100 units of wood can only be produced by the expenditure of 200 units of energy (labour and tools), would one then stop the production of wood? There might come a time in which it would be impossible to live without such waste, be it that an ice age begins or other emergencies befall us. All we can do is to find the best way of living, but it makes no sense to make entrepreneurial calculations of losses. (Neurath [1925] 2004b, 470)

The point can be generalized: even behind the assessment of merely present-day costs and benefits stand assumptions concerning the renewability of the resources involved. Again the point is “ecological incommensurability,” which calls for multi-criterial evaluation.

Against the claim that monetary algorithms could overrule incommensurability stands the realization that they would require a prior non-algorithmic weighing up of competing needs etc. and their determination in monetary values. It is this thought that justifies for Neurath the view that socialist calculation is moneyless, that socialist economic plans are designed by multi-criterial evaluation.

“Costs” in the capitalist sense and the “negative quantities” of socialist calculation do not come to the same thing. . . . The “positive quantities” of the socialist order also do not come to the same thing as the “profit” of capitalism. Savings in coal, trees, etc., beyond amounting to savings in the displeasure of work, mean the preservation of future pleasure, a positive quantity. For instance, that coal is used nowadays for silly things is to be blamed for people freezing in the future. Still, one can only give vague estimates. Saving certain raw materials can become pointless if one discovers something new. The future figures in the balance sheets of the capitalist order only in so far as the demand is anticipated. The freezing people of the future only show up if there is already now a demand for future coal. Just as before, capitalism would cut down the forests even if the consequence were karstification in a hundred years. In the tropics, and elsewhere, capitalism engages in over-exploitation without any disturbance. In short, for capitalism savings would be a loss of profits. (470–71)

Thus, when it came to showing that the very logic of capitalism consists in the wrongful absolutization of the profit motive as definitive of economic action, it was ecological incommensurability that Neurath invoked. One crucible of Neurath’s argument for socialism lies exactly

along the surprisingly contemporary lines traced by Martinez-Alier. His brief 1928 lines were not a one-off.

3. The Ecological Argument in the Socialist Calculation Debate

So by 1925 Neurath had the ecological argument in place. This was the year of the publication of *Wirtschaftsplan und Naturalrechnung* in which he sought to take further his argument not only with liberal economists like Mises, and elder statesmen of social science like Weber, but also with fellow socialists like Karl Kautsky. Unfortunately, however, Neurath's ecological argument was not voiced in the book, but only in the short article from the same year in *Der Kampf*. Given that most contemporary critics found nothing new on the calculation argument in the book (Weil 1926; Mises 1928), they might be forgiven for not having looked in the journals as well. Given that the crucial argument was reprised in Neurath's next book, however, its continued neglect begins to look like carelessness.¹⁵ But let's consider the consequences that follow from it.

Neurath's response to Mises's counter—that socialism was impossible, for its in-kind calculation rendered rational economic calculation impossible—was that in-kind calculation was unavoidable in any responsible economic decision making concerning nonrenewable resources. On pain of failing this dimension of economic reasoning altogether, economic rationality was bound to do without or go beyond calculation with monetary units—even when it came to production goods. It is this point that hits home against Mises. But how far does this argument get us toward socialism, indeed a moneyless economy? Did Neurath argue from the problem of assessing the transgenerational ecological consequences of economic policies to the outright abolition of money? Even for Neurath that would be quite a jump!

First note the following phrase in Neurath's 1928 version of the ecological argument: "Such and many other non-technical matters determine the choice of a technically calculable plan" ([1928] 1973, 263). Neurath here drew a distinction between "non-technical matters" and a "technically calculable plan." Similarly, note the phrase in his original 1925 argument: "Once that [the ranking of ecological priorities] has been determined at least in outline, it makes sense to ask what is the best use of

15. Even Günther Chaloupek (1990) only lists Neurath's *Der Kampf* article (1925) in his bibliography, but appears to remain unaware of its ecological argument.

the existing raw materials, machines, labour power, etc.” ([1925] 2004b, 468). (Note also Neurath’s talk of “technical efficiency” in *Wirtschaftsplan* [(1925) 2004, 445].) This is an important distinction between two types of plan or levels or stages of economic planning. Neurath distinguished what one could call an “outline plan” and a “technical plan.” The outline plan lays down a set of in-kind production goals that are held to be essential in that plan’s framework; the technical plan then lays down the best use of the means of production in order to reach the specified production goals.

Now ask to what level of planning the incommensurability claim applies. It applies, first, at the level of outline planning prior to the drawing up of technical plans. Here incommensurability pertains to the evaluative grounds on which basic allocative decisions in an administrative economy are taken, the grounds of preferring one production plan over another. But incommensurability also comes into play when the best means to realize a plan are considered. Whatever incommensurability is met with here is of a more limited range pertaining to different ways of fulfilling predetermined specific tasks. What also emerges, therefore, is that the forms of in-kind calculation pertaining to the two types of plan are different. Unlike outline plans, technical plans take output goals as given and work out, on the basis of labor technology statistics, their optimal implementation sets. We can distinguish these as technical from nontechnical efficiencies.

Neurath’s ecological incommensurability claim says that only comparative and holistic in-kind evaluation enables one to deal with ecological issues. Socialist economics can deal with the incommensurabilities involved there, because it allows for such in-kind calculation and is not bound to monetary calculation. In that respect Neurath did possess a limited argument for socialism. Of course, so construed nothing is yet said about what other role money may still have to play: about this matter the ecological argument remains silent. Thus all that the argument establishes is thesis 1, that there are dimensions of economic decision making where market principles cannot work. While ecological incommensurability affects both the assessment of technical and nontechnical efficiencies, of technical and outline plans, the argument says nothing about thesis 2, that the market is not needed for anything. Note then that Neurath’s ecological argument, logically speaking, is an argument against the exclusive rule of money calculation in economic matters. It is

not an argument that establishes the exclusive rule of in-kind calculation: it redeems the weak but not the strong in-kind calculability assumption.

If this sounds like diminishing Neurath's argument, then only half the story has been told, for it also improves his position against Mises. On the traditional interpretation, Neurath was reduced to claiming what was not in fact disputed; now he had an argument against Mises's contention that the assessment of alternative uses of production goods can only ever proceed in monetary terms. (Whether this argument would be acceptable to all parties is another question, of course.) Still, even this may not yet be the whole story. The ecological argument also provides much needed flexibility for Neurath's anticapitalist argument. It provides the conceptual space to distinguish between theses 1 and 2—if one were so inclined. Whether, and if so when and why, Neurath disentangled the ecological argument and the strong in-kind calculability assumption is an issue I briefly return to in the conclusion.

Consider now what the introduction of ecological considerations did for the position of Neurath's opponent. As noted, Mises's 1928 response to recent contributions to the calculation debate did not even acknowledge Neurath's ecological argument, but it is not obvious how Mises could have responded. It is clear that Mises rejected the idea of assigning money prices to extra-economic values. Monetary calculation "can never obtain as a measure for the calculation of those value-determining elements which stand outside the domain of exchange transactions," like the "beauty of the waterfall which the scheme [for erecting a waterworks] might impair" (Mises [1920] 1935, 98–99; cf. [1922] 1951, 116). Of course, one could try to capture some of the value of the beauty of the waterfall in terms of the monetary value of "the diminution of tourist traffic or similar changes" its removal would bring about ([1920] 1935, 99), but that would not be valuing its aesthetic appeal. Mises ([1920] 1935, 99) held that these extra-economic values can "be embraced straightaway within the ambit of our judgement of values" because "all those ideal goods are goods of a lower order" (cf. [1922] 1951, 116). When Mises ([1920] 1935, 100) went on to declare that "once we see clearly how highly we value beauty, health, honour and pride, surely nothing can prevent us from paying a corresponding regard to them" (cf. [1922] 1951, 116), he suggested that comparative in-kind valuations will determine for us personally the opportunity cost we would be willing to incur so as to enjoy the extra-economic values in question.

So Mises did recognize value incommensurability: the waterfall example illustrates precisely those “‘extra-economic’ elements” that are “not substitutable against each other on the market and therefore do not enter into exchange-relationships” ([1920] 1935, 99; cf. [1922] 1951, 116). But could the envisaged strategy work also against Neurath’s ecological argument? There Mises cannot rely on his own advice that extra-economic values must be taken account of directly—namely, by confronting monetary gains or losses with the gain or loss in these non-economic values—for Neurath’s argument deals with the impact the ecological gain or loss has on the proper deployment of production goods. It would not help to try to argue that such ecological considerations simply do not, cannot, and should not play a role in economic calculation at all—that, surely, would not be credible. Only two possibilities seem to remain. First, we may wonder whether Mises, even though he barred all forms of nonmarket valuations (shadow pricing or contingent valuation) of the noneconomic values at the level of consumption goods, may not be able to employ such nonmarket valuations for the ecological cost of production goods. As production goods Mises would thus be able to bring environmental goods into the domain of exchange transactions after all. Or, second, we may reason that in order to allow for rational calculation concerning environmental goods, Mises must insist that they be brought into the market more directly and for real. Nowadays it is urged that this be done by the assignment and enforcement of property rights over them.¹⁶ In this way, all environmental goods could be brought into the domain of exchange transactions after all, be they consumption or production goods.

On reflection it becomes clear that only the latter strategy would have remained open for Mises, had he noted Neurath’s argument and chosen to respond to it. Since Austrian economists reject the equilibrium assumptions of neoclassical economics, make-believe markets can never replace real markets and nonmarket valuations can never play the indispensable signaling role of prices. Thus the former strategy remains barred for Mises also at the level of production goods. Only the commodification and privatization of environmental goods and services remains as a Misesian response to the problem of rational accounting for the disposition of nonrenewable resources. Of course, this strategy represents a

16. This is precisely the strategy taken by contemporary “Austrian” economics concerning the problem of rational disposition of all apparent nonmarket goods, following Cordato 1992. For related examples of “free market environmentalism,” see Anderson and Leal [1991] 2001.

straightforward denial of the applicability of Neurath's incommensurability argument to environmental goods.¹⁷

Now what about Hayek? As Martinez-Alier ([1987] 1990, xxi) noted, he "was quite oblivious to the problems of resource depletion and pollution." It is difficult to see how his response could have been different from the one open to Mises, but it seems Hayek also never got this far. Apparently following Mises's lead, Hayek barely took note of Neurath's 1925 book (it appears only in the bibliography of *Collectivist Economic Planning*) but of nothing else Neurath ever wrote again on the matter—not the 1925 paper containing the explicit version of the ecological incommensurability argument, not its reprise in section 2 of *Lebensgestaltung und Klassenkampf* of 1928, and certainly not the monograph *Was bedeutet rationale Wirtschaftsbetrachtung?* of 1935.¹⁸ Instead, still in the 1940s Hayek ([1942–44] 1979, 170 n) spoke of Neurath as "the most persistent advocate of such *in natura* calculation," as if no change whatsoever in his argumentation had occurred.

But is it not the case that Neurath simply inherited the ecological problematic from Mises's challenge?¹⁹ In his 1920 article and 1922 book Mises used what certainly looks like an ecological example, the preservation of a waterfall. Yet we must ask what precisely was at issue there: was it the sustainability issue that bothered him? (Mere concern with environmental goods alone cannot count as ecological in the sense of Neurath's incommensurability argument.) In that example, the "extra-economic" values at issue are aesthetic values; questions of sustainability are absent. In two related passages similar conclusions are called for. It is merely alternative uses of production goods that are at issue in "the building of a new railroad" (Mises [1920] 1935, 108; cf. [1922] 1951, 121) or "when the choice lies between the utilization of a water-course for the manufacture of electricity or the extension of a coal-mine and the drawing up of plans for the better employment of the energies latent in coal" ([1920] 1935, 96; cf. [1922] 1951, 114). This suggests strongly

17. It is also unclear how concern for future generations can be included in Mises's ([1949] 1979, chap. 18) strict application of time preference, but bringing the environment into the market may well be intended to overrule the claim to special status of such concerns with the future.

18. The one exception would seem to be Neurath 1931, his contribution to the Amsterdam conference on economic planning of 1931, the proceedings of which Hayek (1935c, 201–2) summarily dismissed.

19. Such a conclusion could be drawn from claims like John O'Neill's (2002) that already Mises's critique addressed ecological issues.

that Mises introduced examples of alternative uses of production goods that contain an ecological dimension to which he was, however, blind. Rather, it was Neurath who, by focusing on the ecological dimension, sought to locate the fly in Mises's ointment.

I conclude that both Mises's and Hayek's stances in the calculation debate are seriously compromised by their failure to take into account Neurath's ecological argument. In light of the latter, their own arguments against him fall short of their goal of establishing the sufficiency of capitalist monetary calculation for purposes of economic rationality. It is only their heirs who have begun to take the problem seriously. I conclude further that, at the time, the debates about socialism and ecology were not quite as entwined as it might appear when one first notices Neurath's ecological argument. Their indeed crucial entwinement in his planning argument seems to have been lost on all of the other contributors.

4. The Development of Neurath's Ecological Argument

The corrections that recognition of the ecological argument requires in the standing attributed to Neurath's planning argument as of 1925, and to Mises's (and Hayek's) anti-Neurathian argument(s) after that date, leave untouched so far the standing of Neurath's planning argument prior to 1925 as well as that of Mises's argument (and Hayek's later one) against economic calculation in socialism in general. That is, prior to the development of the ecological argument Neurath appears to remain vulnerable to Mises's charge against "moneyless socialism." To see whether further consequences need to be drawn I shall now consider what anticipations, if any, of the ecological argument can be discerned in Neurath's writings prior to 1925.

The first question is, When did Neurath "go ecological"? Importantly, his well-known speech to the Munich Workers' and Soldiers' Council in January 1919—the only work of Neurath's to which both Mises and Hayek referred—did not evidence ecological sensitivities. As with Mises, all that is involved in relevant passages are alternative uses of production goods: no recognition is given of the ecological dimension of the problem (e.g., Neurath [1919] 1973a, 146). Relevant passages in "Ein System der Sozialisierung" also fall short of being properly ecological, despite speaking of "waste of resources of all kinds" ([1920] 2004a, 349), for there Neurath can be argued to be concerned simply with the

management of scarcity. The same point applies to the “under-utilisation” of resources criticized in that paper and elsewhere (e.g., [1920] 2004b, 378). Even if Neurath’s reasoning in these papers touches on environmental matters, he does not yet seem concerned with sustainability.²⁰

By contrast, in the collaborative *Können wir heute sozialisieren? (Is It Possible to Undertake Socialization Today?)* of 1919 the concern with sustainability (elsewhere only briefly alluded to in “Utopia as a Social Engineer’s Construction” [(1919) 1973b]) is in plain view.²¹ It emerges in the course of a comprehensive critique of the “free market economy.” Allow me to quote at length (and insert markers for the discussion):

Let us ask first, [1] Is this economy as efficient, as “productive” as it could be in light of the available raw materials and energies? That it is not! The supporters of the free economy do not even in principle want to produce as much as possible. They rather want to earn as much as possible, according to the declared principle of this form of economy; they want to achieve maximum “net profit.” . . .

Moreover, we ask [2] whether the free market economy is as economical as an economy should be in the light of the limited resources of the earth and our limited lifespans—and as it could be, given at least the same output. That it is not! [2.1] In the first place, it wastes raw materials. In quite a few countries coal will last only for another few decades. From coal one can produce the most valuable and permanently useful chemicals that one does not know how to produce without it. Still, what are we doing with coal? We “heat” furnaces and locomotives and other spaces and so waste it. One could provide heating in a different way, e.g., by means of gas or electricity. But that would be “more expensive,” which means: the entrepreneurs, the joint

20. Once the full ecological incommensurability argument is in place, as it was in the 1925 *Der Kampf* article, one may see Neurath’s long-standing concern with waste and/or underutilization of resources against its background as implicitly ecological, namely, as making reference to an ecological horizon of what is and is not renewable. Without that ecological argument as explicit context, however, concern with waste and/or underutilization can only count as the standard concern with maximizing the utility of scarce resources. For instance, note that Neurath ([1925] 2004a, 436) wrote of “raw material [that] will be in short supply [such that] thrift will be necessary,” but without the explicit ecological argument this was not recognized by his readers as pertaining also to ecological reasoning.

21. Though it was written by Wolfgang Schumann, his longtime collaborator in Saxony and coauthor also of the Kranold-Schumann-Neurath socialization plan, Neurath appeared on the title as coauthor of the little book since Schumann felt “indebted to [his] friend Otto Neurath not only for a number of incisive improvements but also, after many a year of studentship, for nearly all the scientific-economic content” of the work (Neurath and Schumann 1919, 4).

stock companies, would not make as much profit from them. So they exploit coal mines and sell coal for heating because they value their net profit more highly than humanity's need for coal in the future. It is the same with other raw materials. We do not even stop to think whether we should conserve materials for the sake of future generations, but let the decision be made by the desire for net profit on the part of a few of our contemporaries. [2.2] Secondly, the free market economy also wastes human powers. Thousands of unpleasant tasks, perhaps detrimental to one's health, are performed by human hands even though machines could do them. But machines would be "more expensive," human labor "cheaper," so net profit decides that humans will suffer, fall ill, and die early, for the entrepreneur would be less well off with machines.

Thus prompted we ask, thirdly, [2.3] whether the free market economy is rational, that means, whether it employs technological inventions wherever possible, whether it produces the greatest yield for the least effort. One can designate the degree to which technical and scientific inventions and methods are employed as the technological level of an economy. Present-day economy is not rational; it is of a lower level than need be, given the state of technological knowledge and of the science of labor and management. It is rational only to that degree precisely which is conducive for net profits. . . .

The free market economy, this much we know today, was not as productive as an economy can be; it wasn't as economical, it wasn't as rational. One question remains: [3] Did it bring happiness? It did not. Only very few people were happy with it. The overwhelming majority suffered during its reign in anonymity. (Neurath and Schumann 1919, 13–14, 15–16, 19)

It would be difficult to find the concerns of environmental sustainability expressed more clearly than under point 2.1 about the free market economy wasting raw materials. (The other points are familiar, of course, from Neurath's other writings; together with the occasional complaint about the great inequalities created under capitalism, they made his case against the latter.)

So sustainability considerations formed an integral part of Neurath's argument for socialism in 1919 already. His earliest ecological argument is the following: monetary calculation under capitalism with net profit as sole impetus inevitably leads to the neglect of ecological concerns as

externalities, whereas calculation in kind in a socialist commonwealth allows for them to be included in production decisions. (By the latter, the political nature of fixing the rate of discount for future costs and benefits is freely recognized.) Now, there are many things we need to know about Neurath's socialism that this argument does not tell us, but it does speak strongly in favor of the research program "calculation in kind." This program develops the representational tools that transcend the limitations of monetary profit calculation. Those for whom the urgency of ecological concerns is overwhelming have little choice but to put their hope in this project.

Yet where did this first ecological argument leave Neurath in the calculation debate? Appreciating the dialectical context is important here. First we must note that it was put forward in 1919, in full innocence of Mises's then still future challenge. Secondly we must note that Mises did not take account of it either. That monetary calculation under capitalism with net profit as sole impetus inevitably leads to the neglect of ecological concerns is not a claim that Mises's 1920 argument responded to. (Just as Neurath's ecological argument of 1925 was not contained in that year's book but only in a small article, so his first ecological argument of 1919 was not contained in his widely cited collection of that year.) It follows that, even though he held it all along, Neurath could reemploy the argument as an effective counter to Mises, intending it also to respond to the latter's concern about the rational use of production goods.

As we saw, that is what Neurath did in 1925. Yet the very point that it was decisions concerning production goods as well that fell under the ecological incommensurability argument was made not explicitly but only indicated contextually by reasserting his old argument in the context of his rebuttal of Mises's challenge. That all along it was meant to apply to all types of goods suggests that no difference obtained between Neurath's ecological arguments: all that was novel in 1925 was the recognition that the old argument had gained a new edge. To see whether Neurath's 1919 argument is indeed identical with that of 1925 and 1928, we must ask whether the distinction between outline and technical plans and types of efficiency that is characteristic of the later argument can be traced back to 1919 as well.

That Neurath already made the distinction between outline and technical plans comes out in different ways. In *Die Sozialisierung Sachsens*, the verbatim account of three lectures to and discussions with the Workers' and Soldiers' Council in Chemnitz in March 1919, as in other

publications of the period ([1919] 1973a, [1920] 2004a, [1920] 2004b), the distinction of different types of plan finds expression in different “organs” or “departments” of the Central Economic Administration (CEA).²² The CEA comprises a Center for Organization, which was to translate the objectives of the adopted plan into actual production directives for individual parts of the economy; a Center for Calculation In Kind, which devises a plurality of production plans and specifies their consequences (1919b, 18); a Center for Rationalization, which seeks to “ensure that production is handled most efficiently” (19); and a Center for Production Control to ensure that the production directives are followed (20). Making plans of different sorts is the order of the day for the Centers for Calculation In Kind and for Rationalization.

The little book with Schumann meanwhile spells out further that the “comprehensive plan” is a multistep planning process of which separate steps are distinguished: first, the assessment of the social need and the social cost of various possible production goals; second, the determination of the actual production goals to be pursued. “In the socialist society, by contrast, a comprehensive plan will decide what is required in terms of social need and what can be produced without social harm. Then it will be decided what should be produced” (Neurath and Schumann 1919, 36–37). Next, a third step in the planning process is noted. “Once labor is employed in accordance with a plan and at a natural level of effort, the productivity of an economy as a whole can be raised far beyond the present measure. Then it is possible to rationally structure all work tasks” (39). While steps 1 and 2 pertain to outline planning, step 3 clearly pertains to technical planning. Since both outline and technical planning are in kind, there does remain room for something like technical efficiency different from overall efficiency of an economy. So-called in-kind calculation comes in two forms: broad comparative evaluations of bundles of incommensurably valued goods and statistical evaluations of relative performances, that is, technical data concerning input-output quantities for given time periods.²³

22. For further discussion of the organizational aspect of socialization, see Cartwright, Cat, Fleck, and Uebel 1996, 32–42.

23. That Neurath ([1920] 2004b, 382) elsewhere wrote that “in the administrative economy the plan is what net profit is in the market economy: the indicator of what is economical,” or that the plan “served as an indicator of economic efficiency” (Neurath and Schumann 1919, 37), does not show that he did not distinguish the corresponding two kinds of efficiency. Importantly, in his essay for the *Archiv für Sozialwissenschaft und Sozialpolitik* Neurath ([1920] 2004a, 355) was more careful: “The general economic plans will have to replace net profits in regulating

But what is the relation between money and technical efficiency? Recall that in his Munich lecture of January 1919 (see the quote in section 1 above) a distinction close to that of types of plan seems anticipated, namely, between levels where money calculation could not and where it could apply, albeit in some reduced capacity. The idea was that while after socialization “money is no longer a driving force,” that is, that net profit no longer determines the direction and output of the economy, money may still be used for certain accounting purposes. Elsewhere Neurath ([1920] 2004b, 381–82) drew the same distinction, even allowing for the retention of private property in the means of production after socialization (a view for which he was ridiculed to no end but which simply drew the analytical distinction between political and economic organization). Of course, one will want to know just how the respective money sums are determined: what fixes them in the absence of a real market that determines the price of goods traded on it? But put this concern aside for the moment and rather ask whether the residual use of money maps onto the domain of technical measures. If money was thought able, in 1919, to assess at least technical efficiency, a clear difference between the 1919 and the 1925/1928 argument would obtain.

For Neurath money was to be used only as a unit by which to measure the amount of any goods a person is entitled to by their wage. “It may happen already in the foreseeable future that money in essence only continues to function as a voucher for various goods, but no longer as a unit of calculation in large-scale economic balances, no longer as a yardstick for any decisions” (1919c, 57). Such money was neutered, of course: “This money cannot be used to earn interest. This money is unable to subjugate people, for it only serves for personal use” (1919b, 87). Still, this residual form of money was not unimportant. Neurath noted that compared to the introduction of an economic plan, the dethronement of the profit motive, “the dismantlement of the money order must proceed considerably slower, for here we are dealing with a very complicated mechanism that must be phased out” (90). To this end he suggested the introduction of “unredeemable giro-money”: money in accounts that cannot be cashed. Thus “we can begin the socialization of Saxony, meaning the introduction of a large-scale socialist economy in kind, without having to abolish money as such right away. During the period of transition, we retain power over money by means of the

the economy.” That is all that his misleading talk of “indicator” can legitimately amount to: in-kind reasoning replacing net profit as “regulator” of the economy.

unredeemable giro-money” (91).²⁴ Whatever its other utility, however, even in its reduced form money provided no measure for efficient organization of production processes, but only served as a technical tool for purposes of organizing the distribution by marking the allocation of not further specified bundles of goods.

Comparing again Neurath’s ecological argument of 1925 we find that nothing but the merely contextually mediated focus on production goods separates it from the first ecological argument of 1919. It follows that what holds for the later argument holds also for the earlier one.²⁵ Needless to say, Neurath’s argument for marketless socialism was as little redeemed by the 1919 argument as it was by the argument of 1925 and 1928. While ecological incommensurability affects both technical and outline planning, this does not show that in-kind calculation can replace monetary calculation in toto. Whether in the years under consideration here Neurath simply blundered by confusing insufficiency for nonnecessity or relied on as yet unspecified further considerations in support of the strong in-kind calculability assumption must be left undecided here.

5. Conclusion

It is high time for a disclaimer. It is not my intention to turn Neurath into a fully fledged twenty-first-century ecological thinker. Both his belief in monocultural farming methods and global division of labor ([1931] 2004, 487, 489) and his acceptance of biotechnology and genetic engineering (1922b, 55) contradict contemporary ecological sensibilities. Moreover, the ecological argument was only part, not the whole, of his planning argument, as Neurath’s retention of the strong in-kind calculability assumption shows. That said, it nevertheless is highly significant in at least two respects that Neurath’s argument for socialism did incorporate it.

First note that the radical terminology of Neurath’s planning argument and advocacy of calculation and economy in kind hides a crucial

24. Elsewhere, Neurath (1922a, 27, 35; 1922b, 58) allowed, according to Otto Bauer’s Austrian socialization plans, for a workers’ bank which granted giro-money credit to workers’ cooperatives—against whose social capitalism he also warned strongly, just as he bemoaned the lack of an economic plan in Bauer’s scheme (1922b, 59)—but added “all this is valid only for the first stage of socialization, for in a later period the money order will be done away with and replaced by the direct administration of goods in kind” (1920, 8–9).

25. Even Martinez-Alier’s dating of Neurath’s ecological argument to 1919 stands vindicated, for it was part of Neurath’s original planning argument.

ambiguity of the reach of the planning ambition. That Neurath's planning argument may be so ambiguous becomes apparent once it is noted that still in the 1940s he speaks of planning, but that it is a different form of planning that now seems to be envisaged. What formerly was insistence on the comprehensive economic plan became stress on the need to fix socioeconomic and legal framework conditions. This was not entirely new but represents the development of a long-standing concern.²⁶ Pointedly, Neurath called his reentry to the debate "International Planning for Freedom" ([1942] 1973).

In the early, post-World War I planning argument, of course, not much ambiguity seems detectable, but we noticed that below its surface the distinction between types of in-kind calculability assumptions needed to be taken account of when assessing the argument's validity. In the ecological argument, calculation in kind is represented by the weak in-kind calculability assumption. In its contemporary form as multi-criteria evaluation (weak comparability without compensation and providing at times only partial orderings), this approach represents a research program that is very much alive.²⁷ In the argument for marketless socialism, calculation in kind is associated with strong in-kind calculability and in this form finds few defenders these days. Insofar as this assumption claims to render money calculation redundant, it is open to a set of strong objections. These are, of course, Mises's and Hayek's: first, that the data-gathering task of the universal statistics on which Neurath relied would be too extensive and complex to be practicable and, in any case, fail to determine an optimal deployment of production goods; second, that this task is impossible since it would require the explication and codification of what are essentially tacit pieces of knowledge sensitive for their operation to highly local conditions. In the light of these objections, Neurath's original planning argument must be held to have traded on the future achievement of a research program that subsequently was not taken up widely enough to be considered successful, if it was not abandoned at the start as hopeless.

The distinction between kinds of in-kind calculability assumptions easily maps into two explications of Neurath's ([1920] 2004b, 383) guiding concept of economy in kind: "If no longer sums of money, but things themselves are taken as the basis for our decisions, then we cannot speak

26. See the comments on economic pluralism in socialism (Neurath [1917] 1919, 170; [1920] 2004b, 401–3) and the remarks about centralism as merely a passing phase of development (1922a, 22).

27. See Munda 1995 and Martinez-Alier, Munda, and O'Neill 1998, 1999.

of monetary economy but only of economy in kind.” The two explications are, of course, (1) that there are areas where the market cannot work and where criteria other than profitability are needed, and (2) that we can do without a market altogether, for the market is not needed for anything. Closely related is the background contention (3) that socialism means a marketless economy. Shared at the time by Neurath both with the liberal Mises and the Soviet theoreticians Lenin and Nikolai Bukharin (and later with political economists of the Frankfurt school like Friedrich Pollock), contention 3 is widely disputed nowadays, although it certainly holds true of the speculative stage of social development that Marx called “communism.” Once contention 3 is rejected, of course, the way is open to concentrate on 1 as it would not be if 3 is retained.

In the standard interpretation, Neurath holds to contention 2, since he contends 3—and he never changes. By contrast, the Neurath of the ecologists would only have to hold to 1, given their more tenuous relation to socialism of type 3. What these ecologists do, of course, is pick and choose: they take the ecological argument and discard the strong in-kind calculability assumption. For them, the rejection of the market in toto is not required, for the ecological decisions here simply are guided by other types of consideration that are protected against being overruled by arguments from profit-oriented rationality. The question arises whether in the 1940s Neurath had not begun to think the same. Pursuing his ecological argument and reflecting on the reasons against the strong in-kind calculability assumption may well have led him, in later years, to the acceptance of a mixed economy with a more or less constrained market (as in Popper-Lynkeus’s original plans). In doing so, of course, Neurath would have moved from contention 2 to contention 1, from advocacy of marketless socialism in its strictest form to advocacy of an argument against what has been called “market fundamentalism,” the idea that “markets will take care of all our needs” (Soros 2000, xii; cf. Stiglitz 2002). Here we cannot follow Neurath further in his development and determine just what kind of planning he defended in his later years—nor consider the prehistory of his debate with Mises. For now we must leave it open whether in the 1940s he really distinguished between contentions 1 and 2—or even whether in 1919 he was but the victim of a modal confusion.

The second respect in which Neurath’s ecological argument acquires significance is less concerned with the standing of its author as a theoretician than the relevance of the socialist calculation debate. Note here

that Neurath's possession of an argument against market fundamentalism does not yet mean that his argument carries in all quarters. Just as Neurath's in-kind theorizing finds contemporary backing amidst the multi-criteria evaluation theorists, so Mises's neglect of that argument is nowadays made good by contemporary "Austrian" attempts to deal with the problem of environmental externalities.²⁸ Via this extension, as it were, the socialist calculation debate becomes, once again, highly topical. Note that both Neurath and Mises would have rejected the nonmarket valuations that aimed to introduce environmental goods into the market. The socialist calculation debate therefore shows that attempts by Austrian economists to style themselves as the sole opposition to neoclassical environmental economics would be as misleading as a claim to this effect by neo-Neurathians. Rather, both oppose neoclassical ruses like shadow pricing or contingent valuation analysis—but do so on different grounds. While both reject the equilibrium assumptions of neoclassicism, Misesans replace them with praxeological axioms while Neurath and proponents of multi-criteria evaluations reject the algorithmic conception of rationality that the Austrian economists still share with the neoclassicists—both of whom, in turn, reject the notion of ecological incommensurabilities.

In this connection, one additional point about calculation in kind is worth noting. Calculation in kind forsakes determinacy in the sense of being able to produce only partial orderings. In this respect it is inferior to money calculation, yet there is also something that can be gained by its "multidimensional" perspective (Neurath [1935] 1987, 105). Rather than determine value, in-kind calculation provides means to deliberate about valuations. What is often overlooked is that in-kind criteria do not have to perform the task of measuring the profitability of an enterprise in the capitalist system, but rather that of indicating multi-criterially the outcomes of possible production decisions within the reach of the decision makers. That is to say, calculation in kind provides indicators that won't be determinative on their own but that can provide criteria concerning which intersubjective agreement may be reached by deliberation. (Comparisons of plans in kind show vividly and concretely the opportunity costs of the various plans for the social whole. From the "Austrian" perspective, of course, the concept of social cost is deeply problematic.) That the failure to be determinative may be coupled with

28. For the former, see the previous footnote; for the latter, see footnote 16.

some success in being indicative-deliberative was already noted by Neurath ([1925] 2004a, 429) in reaction to Mises's challenge. This potential of in-kind representational systems to serve as a tool for processes of deliberation—which are to replace the automatism of the market—becomes an increasingly significant element of Neurath's later, far more diffuse, planning argument. Importantly, this deliberative gain is achieved already by weak in-kind calculability alone.

To conclude. Oskar Lange's famous tease that a statue of Ludwig von Mises would be displayed prominently in the socialist hall of fame nowadays is held to have backfired rather spectacularly. There surely lies a comparable irony in the fact that Otto Neurath—long dismissed as a luddite by the economics profession—harbored an argument against market fundamentalism that transcends the limitations of the original socialist calculation debate in which it was first developed.

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