"Seeing Is Believing": Otto Neurath, Graphic Art, and the Social Order

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> The principle of visualization . . . , based on the ISOTYPE method, . . . shows connexions between facts instead of discussing them. Impressive visual aids do not merely act as illustrations or as eye-bait. . . . they are part of the explanations themselves.
> —Otto Neurath, *Modern Man in the Making*

> Visual education leads to internationalisation much more than word education does. . . . Visual education is related to the extension of intellectual democracy within single communities and within mankind, it is an element of international social planning and engineering.
> —Otto Neurath, "Visual Education: Humanisation versus Popularisation"

> Altering our scientific language is cohesive with altering our social and private life. There is no exterritoriality [*sic*] for sociologists, or for other scientists, and this is not always sufficiently acknowledged. Sociologists . . . also argue, decide, and act like other human beings within their scientific field. Imagine sailors who, far out at sea, transform the shape of their clumsy vessel from a more circular to a more fishlike one. They make use of some drifting timber, besides the timber of the old structure, to modify the skeleton and the hull of their vessel. But they cannot put the ship in dock in order to start from scratch. During their work they stay on the old structure and deal with heavy gales and thundering waves. In transforming their ship they take care that dangerous leakages do not occur. A new ship grows out of the old one, step by step—and while they are still building, the sailors may already be thinking of a new structure, and they will not always agree with one another. The whole business will go on in a way we cannot even anticipate today. That is our fate.
> —Otto Neurath, "Foundations of the Social Sciences"

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This essay is about Otto Neurath (1882–1945), teacher, socialist, founding member of the Vienna Circle, and tireless advocate of economic planning. He is of particular interest for any discussion of the links between art and economics for the simple reason that, in a unique manner, he managed to essentially *meld* the two. I do not mean that he was interested in the economic analysis of artistic work or that he had an eye for economic or commercial themes in the history of art. Rather, beginning after World War I and ending with his death in 1945, Neurath seized on a particular kind of art—modern German graphic art of the interwar period—and made it an integral element of both his politics and his theoretical analysis of the socioeconomic order. He appropriated what he saw as a modern, clear, and therefore politically congenial, art form and used it to develop a "view"—literally—of economic organization.

In particular, graphic art allowed Neurath to portray the economy as a collection of visible, tangible, and potentially manipulable objects, rather than as the manifestation of invisible, intangible, and less controllable beliefs and desires. This was cohesive with Neurath's dismissal of orthodox, neoclassical economic theory, whose utilitarian basis he regarded as metaphysical and whose focus on monetary calculation he saw as no more than an outdated inheritance from premodern times. His recourse to art, therefore, was an integral part of what separated him from his opponents. To Friedrich Hayek, in particular, who learned to see the economy as a complexly structured mechanism, coordinating the beliefs and desires of dispersed, and differently informed, individuals, Neurath's focus on the visible, the concrete, was "naive" and, of course, politically dangerous. While Hayek turned to the mind to ground the market social structure in the invisible characteristics of a relatively fixed human nature, Neurath turned to visual language as a way to avoid addressing the role of the mind, or the "mental," in social theory. His appropriation of visual art was part of a bid to give plasticity to the socioeconomic order—to portray it as highly

malleable, and ultimately dependent on social debate and political action rather than on impersonal market forces. Graphic art helped Neurath suggest that the social structure, like the sailors' ship, might be built in many possible ways.

Background

Neurath received a doctorate from the school of philosophy at Berlin's Friedrich-Wilhelms-Universität, with a dissertation on ancient concepts of commerce and agriculture, supervised by Eduard Meyer and Gustav Schmoller (see Cartwright et al. 1996, the various autobiographical and biographical essays in "Memories of Otto Neurath" in M. Neurath 1973, 1–80, and other references therein). He then became a teacher of economics and history at the Neue Wiener Handelsakademie, publishing a reader on economics from Plato to Marx, as well as an economic textbook (Neurath and Schapire-Neurath 1910; Neurath 1910). Around 1912, he became involved in discussions with his brother-in-law, mathematician Hans Hahn, and with Rudolf Carnap, Herbert Feigl, and others in what was known as the "early" Vienna Circle. In 1912–13 he spent time in the Balkan states studying the economic effects of war, where he drew early conclusions about the nature and efficacy of wartime planning and control of the economy. He emphasized that, during war, profit considerations were given lower priority than economic production and efficiency and barter reemerged, indicating the non-necessity of monetary exchange. "He had a concrete vision of the complete organisation of a state at war, starting with centralisation of bread production via an expansion of the storehouse system up to the standardisation of railway wagons" (Cartwright et al. 1996, 18). War, for Neurath, was the "midwife" for the planned economy-in-kind.

He was drafted during the war and became head of the General War and Army Economics section attached to the War Ministry and then director of the Museum of War Economy in Leipzig. Here, aided by fellow socialist Wolfgang Schumann, who was editor of the cultural journal *Kunstwart und Kulturwart*, he organized exhibitions of statistical tables and models designed to show the mechanism of the economy in conditions of war. This marked the beginning of his activities in visual education (see M. Neurath 1973), and he was decorated for this work at the war's end. In 1919, he was involved in the movement for socialization in Saxony and Bavaria, giving lectures to miners in Southern Saxony and then setting up the central planning administration for the "soviet republic" that was proclaimed by the Bavarian Communists, Socialists, and anarchists led by Kurt Eisner. Here Neurath developed his ideas on economic planning—on the feasibility of organizing the central administration of raw materials, to be distributed to associations of factories, mines, and cooperatives of craftsmen and farmers. A central bank would control credit in what would essentially be a moneyless economy, based on wages in kind and barter. In writing on planning, he was following in a well-established tradition, with the models of Ballod and Popper-Lynkeus having being discussed for years. The latter, for example, was known for his proposal of a minimum living wage for the whole population, with a form of conscription to be used to create a "food army" in which citizens would serve for a short period, working for society. Other variants were developed by both Otto Bauer, of the Viennese Social Democrats, who emphasized legislative reform and only the very gradual socialization of businesses, and German Communist Karl Korsch, who favored more radical means, including immediate widespread socialization and the use of force. With the Bavarian movement crushed by the "white forces," Neurath found himself in jail, but he was soon released through the intervention of the Austrian government, with testimony in his defense from others, including Max Weber and Bauer. Their arguments portrayed Neurath as an economic technician, concerned primarily with the logistical aspects of economic organization and naively deluded about the separation of economics and politics. In fact, although often criticized for his views on economics, he was anything but politically unaware.[1]

Being-in-the-World with Neurath

Neurath's scientific and philosophical writings reflected his radical politics. For him, science, philosophy, politics, and art were all interwoven. His aim was the creation of a new modern form of life: a collectivist transformation of the social order, predicated on, among other things, the unification of science (from physics to economics) and a new attitude to art in which clarity would be achieved by dispelling with pre-

1. It was these writings by Neurath, Bauer, and other advocates of planning that helped provoke the refutation by liberal Ludwig von Mises (1935), which gave rise to the protracted socialist calculation debate (see Chaloupek 1990; Lavoie 1985).

modern ornament. Neurath saw the unification of science as a necessary condition for social progress. The dispersal of metaphysics and the advancement of the "scientific view of the world" were both necessary for the development of undisputed knowledge, which, in turn, paved the way for social transformation. If theology and metaphysics had served to console and fragment the workers, true science would alert and unify them: the collectivization of scientific work was seen as concomitant with political collectivization. Thus in a 1928 essay on "Personal Life and Class Struggle," Neurath wrote: "A scientific attitude is spreading, even among the less educated, whereas the less scientific attitude of the theological and philosophical era was often held by the most highly educated people of their time. . . . Today nobody wants to do without science . . . [and] investigation can show that scientific thinking is safeguarded best by the proletariat which can use it to best advantage. . . . Scientific attitude and solidarity go together. Whoever joins the proletariat can say with justification that he joins love and reason" ([1928] 1973, 252). And on the role of scientific knowledge in effecting social transformation, he was quite explicit: "[The] better the proletariat *grasps the social engineering relations of our order* and surveys its own chances, the more successfully it can fight. . . . For the proletarian front the technique of the struggle and the interests of propaganda coincide with high esteem for science and the overcoming of metaphysics" (296–97; emphasis added). As we shall see, it was precisely here, in helping the proletariat "grasp the social engineering relations" of the economy, that visual art had a role to play.

This comingling of philosophy and politics is evident in the Vienna Circle's 1929 manifesto, "The Scientific Conception of the World," where Neurath equates the new scientific outlook with the advancement of a new form of life and suggests that there existed unity in this respect among Circle members:

> [Our] attitudes towards questions of life also showed a noteworthy agreement. . . . For these attitudes are more closely related to the scientific world-conception than it might at first glance appear from a purely theoretical point of view. For instance, endeavours toward a new organization of economic and social relations, toward a unification of mankind, toward a reform of school and education, all show an inner link with scientific world-conception; it appears that these endeavours are welcomed and regarded with sympathy by the members of the Circle, some of whom indeed actively further them. ([1929] 1973, 304–5)[2]

The manifesto also reflected Neurath's particular interests in the prominence it gave to the social sciences, demanding their "purification" along the lines of that achieved in physics. Concepts such as the "folk spirit" were to be abandoned in favor of an empiricist, antimetaphysical science, whose object was simply "people, things and their arrangement" (315). The emergence of such a science was linked to both the displacement of metaphysical ideas by the increased mechanization and modernization of production and discontent among the proletariat: "So it is that in many countries the masses now reject these doctrines much more consciously than ever before, and along with their socialist attitudes tend to lean towards a down-to-earth empiricist view . . . [and] look forward with hope to the course of events to come" (317).

In his own writings on the subject, Neurath describes in greater detail what constitutes valid political economy in an age in which metaphysics has been abandoned (see [1928], [1930], [1931b], and [1931c] all in Neurath 1973; [1935] 1987; [1939–40] 1983; 1944). He named his proposal "Physicalist Sociology":

> [This is] the application of the latest successes of the scientific conception of the world with its physicalism, and its resultant analysis, to sociological inquiries. The analysis of the pursuit of science, as given by Carnap, Frank, Russell, Schlick, Wittgenstein and others, partly following Mach, can also be applied to the sociological field. Here it is not the length of possible deductions or the subtlety of analysis that are essential, but rather that one should note above all which concepts and statements can be considered as part of genuine science and which not. . . . Naturally such an analysis cannot be

2. It was with statements like this that Schlick, the liberal reformer but not radical socialist, was in greatest disagreement. Neurath and Schlick, one contemporary noted, stood on opposite ends of the political spectrum: "Neurath represented the extreme left in the Vienna Circle. . . . At the extreme right . . . stood Schlick. These two men were opposites not only in their thinking but also in their personalities. Schlick, the soft-spoken tall man, supposed to be of aristocratic parentage, lived in the style of the grand bourgeoisie . . . loved to travel, gave musical parties and dinners in the style of cultured rich people of the bourgeois era; Neurath, the consciously non-bourgeois revolutionary, disregarded the petit-bourgeois forms in home and dress (mostly bareheaded, he sometimes wore a cap to show his solidarity with the working class), interested as he was in a novel way of life" (Heinrich Neider, quoted in M. Neurath 1973, 47–48). Schlick's antiradicalism was shared by Karl Menger, another associate of the Circle (see Leonard 1998).

made from without; it requires concrete analysis of reality on the fundamental basis of the sharpened conceptual tools now at our disposal. ([1931b] 1973, 413)

In his pamphlet "Empirical Sociology," Neurath ([1931b] 1973) surveys the history of economics quite extensively, highlighting and rejecting all traces of metaphysics and developing his own framework, "sociology on a materialist basis." This was a neo-Marxist sociology, employing only such concepts as are ultimately reducible to spatiotemporal terms and pointing inexorably toward central planning. Recourse to nonphysicalist concepts was to give way to the use of a strict behaviorism, in which humans were to be studied as one might study a colony of ants. One considered the economic geography of the group, their physical surroundings—what Neurath termed the "life terrain"—and then examined the living standards secured by different forms of socioeconomic arrangement, different "social orders." The dependence on the concept of utility was to be overcome by considering *physical* bundles of consumption and their associated standards of life, the latter being easily compared, according to Neurath:

> Living standard is the central concept of all circumstances that condition . . . a man's mode of behavior, his sorrows and joys. Shelter, food, clothing, health, books, theatres, friendly human surroundings, all this belongs to the standard of living. . . . The living standard is the condition of the behavior we call a style and attitude of life. We speak of a lower living standard if a man's attitude is generally depressed by such a living standard. This of course presupposes that we can arrange attitudes in a sequence, that we may venture to speak of a man having a more or less happy expression, or even dare to compare the modes of behavior of two men along these lines. . . . It is in any case quite legitimate to speak of the living standards of individual men. Within certain bounds one can confidently say that the living standard in one case is worse than in another. (401)[3]

The emphasis on the material, the physical, was tied to Neurath's rejection of the link between money values and living standards. In his "What Is Meant by a Rational Economic Theory?" ([1935] 1987) and

3. Neurath continues: "If in one case a man sits hungry and crying in a dirty, little hole, and in another the same man has a friendly smile and eats happily in a bright villa, we should say that in the first case, the living standard is less favourable than in the second" (401).

his 1944 essay "Foundations of the Social Sciences," he rejects the "idol of monetary calculation." The use of money as a medium of exchange and the tendency to evaluate goods in monetary terms, he claims, is merely a convention. It is a habit, a tradition, grounded socially and not by any fixed feature of human nature, as was shown by the existence of barter economies in the past. We were no more tied to the monetary economy than we were to the premodern taboo on the inclusion of the thirteenth floor in the elevator, which is the example employed by Neurath (see also 1939, 131). For Neurath, the task of a progressive sociology, which is taken to include economics, is first the clarification and then the transformation of the social order: "The theory of social structure is essential for any social engineer, which means anyone who participates as collaborator in the planned organization of all social formations. Prediction of the coming social structure and of the functioning of a given social structure is then at the center of a planned way of life" ([1931b] 1973, 403).

The prelude to such planning, and a constitutive part of his physicalist sociology, was the clarification/illustration of the social order and its (physical) living standards: the "people, things and their arrangement," cited above. And this is where Neurath's museum came in: his economic sociology and his educational museum exhibitions were intermeshed parts of the new form of life he was advancing. The economics he rejected was that which featured metaphysical statements—statements that generated arguments "with strongly emotional colouring"; "whereas in physical matters this colouring has mostly become imperceptible, in sociology it often stands out clearly" (325). A physicalist sociology would privilege clarity, would be without such coloring. Such clarity would be aided through the development of a visual language, the mobilization of the right kind of art toward the right political ends, giving the people "information which is easily remembered": "Such simple, careful symbolic representation is educationally superior to expressionistic play with strong effective colours, to sentimental naturalism, and also to the jokes of caricature" ([1931a] 1973, 215).

Shaping the Social Order: Neurath's Pictorial Politics

In the early 1920s, when he returned to Vienna from Bavaria, Neurath became involved in the work of the city's socialist government. This was Red Vienna, the "third way" between Bolshevism and parliamen-

tary reformism, which emphasized education and the transformation of culture in preparation for the future, poorly specified, revolution. A socialist enclave in a larger conservative Austria, Red Vienna survived from 1920 until the crackdown by the Christian Social Dollfuss national government in 1934. Among the core members of the Vienna Circle, Neurath, Hans Hahn, physicist Philipp Frank (brother of the architect Josef), and Rudolf Carnap were committed Socialists, and they were close to the ruling intelligentsia of the Social Democrats, which included Otto Bauer and Friedrich Adler.

Neurath became general secretary of the Research Institute for Social Economy (Forschungsinstitut für Gemeinwirtschaft), and in 1921 he helped establish the Cooperative Housing and Allotment Association. Here, he engaged several well-known architects, including Adolf Loos, Josef Frank, and Josef Hoffman, to design projects for improved social living. For example, Neurath himself apparently preferred simple terraced housing with connecting gardens and a communal kitchen. The plans and models for these villages were exhibited at what became the Museum for Housing and Urban Development in Vienna, at Parkring 12. Throughout the 1920s, Neurath was very involved in this architectural work, collaborating with members of the Bauhaus in Germany and lecturing there. Like Walter Gropius, Neurath embraced architecture's "shift away from the mystical and toward the streamlined and industrial" (Galison 1990, 715), seeing in it the possibility for a new form of life, based on philosophical clarity, respect for science, and the development of fellow-feeling.

The Housing Museum gave way in 1925 to the Social and Economic Museum of Vienna (SEMV), run by Neurath. This was directed toward a Viennese working class, little inclined to self-education through reading. It was part of the *Bildungspolitik* program of the city's Social Democratic municipal government, and Neurath's efforts were funded by the city, the Viennese Chamber of Workers and Employees, and several large social insurance institutions. Using the "Vienna Method" of pictorial statistics, this center exhibited educational material to the Viennese population, largely involving statistics on social and economic change. The museum had three departments: Labor and Organization, Culture and Life, and Housing and Urban Development. The information was expressly tailored to accommodate an uneducated audience, the use of pictorial symbols intending to overcome literacy and educational barriers and thus stimulate the interest of poor, uneducated Viennese who might otherwise have never set foot inside a museum. During the course of the 1920s, Neurath was able to involve a number of graphic artists in the work of the Museum for Housing and Urban Development and then the SEMV. These included W. J. H. B. Sandberg and Peter Alma, both of whom were Dutch; one Bruno Zuckermann; and the German Gerd Arntz. I have been able to trace some of the work of Alma and Arntz, although they are notable in their absence from the main references in art history and, as far as I can see, in their relative obscurity among historians of art (see Breuille 1991; also Sandberg 1929 and 1931, both of which are cited in Faludi 1996).[4]

Working both in paint and with woodcuts, Peter Alma studied at The Hague in 1904–6.[5] He spent time in Paris close to the circle around Fernand Léger and Diego Rivera, and was one of several Dutch artists in Paris at the time, including Conrad Kickert, Piet Mondrian, and Lodewijk Schelfhout. He had exhibitions in 1912–13 at the Moderne Kunstkring in Amsterdam, the Sonderbund Ausstellung in Cologne, and the Salon des Indépendants in Paris. He was apparently influenced by Mondrian and, in particular, Van der Leck. From 1915 onward, he refined a style that involved the use of primary colors, flat surfaces, and simple forms, with compositions generally based on the horizontal and vertical and lacking depth. He visited the Soviet Union in 1921, making contact with the Russian Constructivists and Suprematists, including Kandinsky, Lissitsky, Tatlin, and Malevitch, and, on returning, encountered another artist *engagé*, the German Gerd Arntz, to whom he would remain close for the next few decades. Reflecting his politics, Alma's work are critical, whether of soul-destroying unemployment or the brutishness of manual labor (see figures 1, 2, and 3). Alma worked for a while in Vienna for Neurath, in the mid-1920s it seems, and published some pamphlets in Dutch dealing with the use of graphic art in the construction of pictorial statistics (see Alma 1930, 1932).

4. I might also mention that my attention was initially drawn to Neurath's use of art not by any of the now-extensive literature on Neurath, but by the remark made by Viennese contemporary Karl Menger concerning the aesthetic (as distinct from political) satisfaction he derived from the graphic work of Alma, Arntz, and Frans Masereel. The Belgian Masereel's interwar novels in woodcuts were marvelous flights of imagination in a period marked by misery. See, for example, his *Le Soleil*, *Mon livre d'heures*, and *Histoire sans paroles*. To the empiricist Neurath, however, Masereel's romantic flights of the imagination and Freudian explorations of unfulfilled desires were all too metaphysical for comfort.

5. Alma was born in Sumatra in 1886 and died in Amsterdam in 1969.

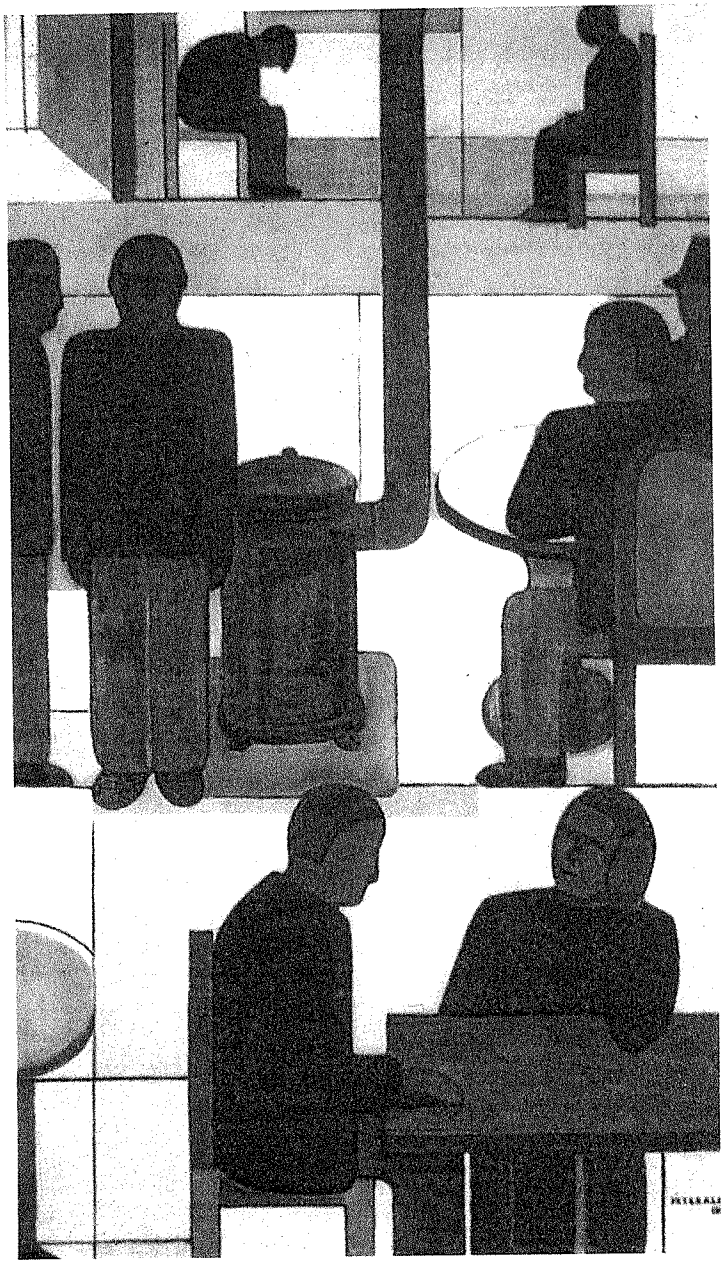

Figure 1 Peter Alma, *Unemployed in a Waiting Room*, 1929. From Breuille 1991, 27.



Figure 2 *Builders*, woodcut, c. 1923. From Sandberg and Jaffé 1961, illustration 199.

Similar social and political themes were explored by Gerd Arntz, who studied in Düsseldorf and was associated with a group of artists, "Stupid," in Cologne in 1920. From 1922, Arntz specialized in lino- and woodcuts and exhibited at many German centers throughout the decade. He became known for his woodcuts, with their simple illustrations in the style of Expressionist engraving, with a geometrical touch inspired by Russian Constructivism (see figure 4). Later, the influence of Alma became evident in more rounded, almost "cartoonish," figures. Like Alma, the element of political critique is key, with class conflict a recurring theme. It was in 1926 in Düsseldorf, at the GESOLEI exhibition (for health, social insurance, and gymnastics),

a. b.

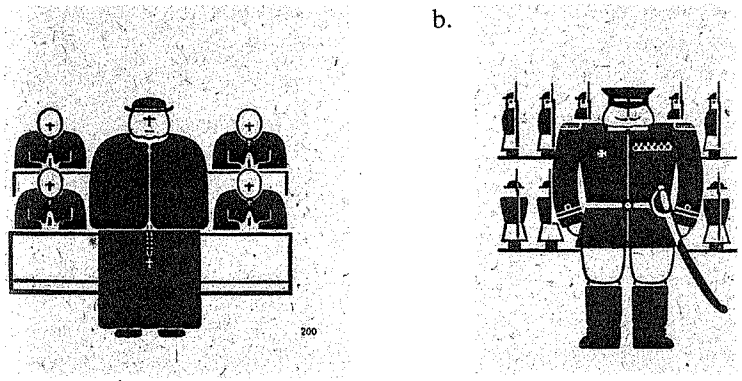

Figure 3 Peter Alma, (a) *Priest*, woodcut, c. 1929, and (b) *General*, woodcut, c. 1929. From Sandberg and Jaffé 1961, illustrations 200 and 201.

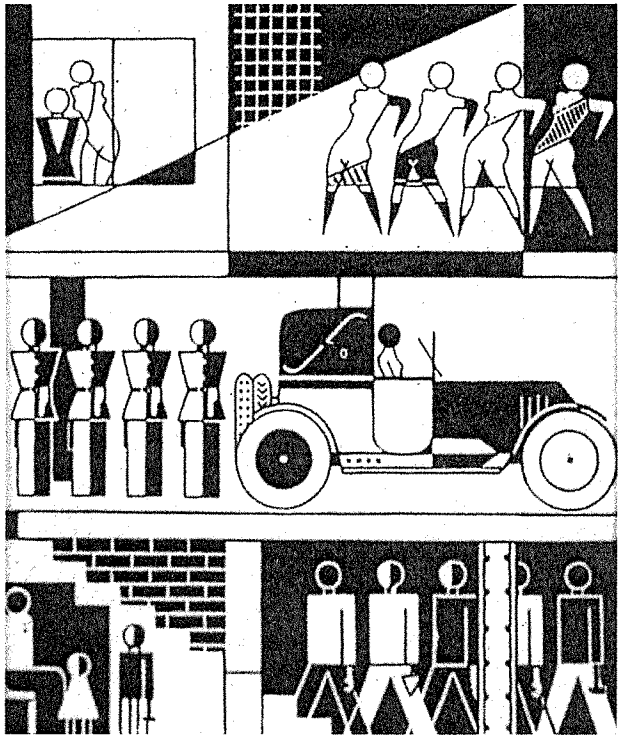

Figure 4 Gerd Arntz, *The Social Order*, woodcut, 1926. From Arntz and Broos, 1979, 10.

that Arntz was discovered by Neurath and inducted into the operations of the SEMV.[6]

With the SEMV, Neurath intended to deliberately subvert the traditional conception of the "museum," stripping it of its traditional mystique, elitism, and historical "weight" and turning it into a reproducible, demystified, collective, modern site. Just as the capacities of the book as an instrument of education/propaganda had been revolutionized by the development of printing techniques, so, too, said Neurath, should the museum cease to strive for uniqueness and become reproducible and uniform. The museum, in his view, was a crucial locus involving social conflict, authority, and discipline:

> And why must the poor visitor to a museum of natural history look at hundreds of birds, even though he can perhaps hardly distinguish the differences, just because some particular ornithologist considers it necessary? . . . What significant questions are answered by such exhibits? . . . Isn't it curious: we are constantly told that we are living in the age of technology, and yet when we enter a modern museum of natural history, there is no sign of it. . . . A huge whale hangs in the middle of the hall; but we do not learn . . . how the skin is transformed into shoes, or the fat into soap that finds its way to the dressing room of a beautiful woman. Nor do we learn how many whales are caught per annum . . . [or] what countries are predominantly engaged in whaling. . . . Human fortunes are connected with this exhibit—starving seamen, hungry families of fishermen in the north of Norway. And so, everything leads to men and society.
>
> *How to organize human life socially—that is the great question which people are asking today with ever greater insistence. The social museum is the museum for our time. And this is its twofold task: to show social processes, and to bring all the facts of life into some recognisable relation with social processes.* ([1933] 1973, 219–20; emphasis added)

6. Neurath's second wife, Marie, recalls: "What [Otto] needed was a designer who had the same tendency towards clear expression that he had. This is how he found Gerd Arntz, his star designer. . . . [In Düsseldorf] he looked around in art exhibitions . . . and saw some wood cuttings by Gerd Arntz. He discovered where he lived and asked him: 'How much do you cost?' . . . For a year or two [Arntz] contributed by sending us designs to Vienna, but then he joined us about 1928" (M. Neurath 1973, 60).

For Neurath, the modern museum was to be democratic—accessible to everybody. It should have branches located in areas convenient to the larger population and with opening hours tailored to suit the pattern of the working week. There were to be no "trustees," Neurath regarding this as a form of feudal holdover, and the general atmosphere was to be light and open rather than weighty and oppressive. The information conveyed was to be simple, clear, and accessible to the uneducated, entertaining where possible, without being trivial. Throughout, the museum was to be a site where visualization would play a role in social transformation: "Modern man is conditioned by the cinema and a wealth of illustrations. He gets much of his knowledge during leisure hours in the most pleasing way through his eyes. If one wants to spread social knowledge, one should use means similar to modern advertisements" (Neurath [1925] 1973, 214). This point is made repeatedly in his writings:

> Besides being more international, visual education from the beginning enforces a more human approach than education through words. It can only deal with things which are within the grasp of everyone's understanding. . . . It would be childish to think of educational means as something isolated from social organisation. . . . With visual aids, one could create something that is common to all, we could educate children in various countries . . . in a way which gives them the feeling of having knowledge in common for human brotherhood. Because I believe that visual aids have this peculiarity, I wish to promote visual education, as an element of human brotherhood. (Neurath [1945] 1973, 248)

Neurath's means of spreading social(ized) knowledge were the pictorial statistics of the "Vienna Method," later coined ISOTYPE (International System of Typographic Education).[7] On the face of it, the principles used in the design of educational statistics were simple. If such pictures were to be pedagogically effective, said Neurath: "At first glance one should be able to distinguish everything important, at second glance some important facts are added, and at third glance, one takes note of some details. If one notices something new the fourth time one looks, then the image is insufficient" (Neurath 1991, 1, quoted in Jansen 1996, 147).

7. The Greek etymology of *iso* also conveyed the idea of sameness, the repeated use of the same symbols.

The most important of the museum's informative graphic art came from the chisel of Arntz, Neurath's chief designer from 1928, who spoke about the differences between a creative painting or woodcut and a pictorial statistic. The latter, he said, "has different elements and different laws than painting, since the proportions are given through the reality of the quantity of things, and a harmonization is not possible on the surface of the chart, if the content is to be shown with all its contrasts" (Arntz 1930, 30, quoted in Jansen 1996, 151) (e.g., contrast a statistic with his "Social Order"). The basic principle was that one symbol meant a given number—for example, 1 million soldiers—and larger and smaller quantities were represented by, respectively, more and less symbols.[8] Conveying quantitative information by symbols was deemed superior to doing it by the more common geometric means of curves and areas: "Not only that symbols of men and trees are friendlier to look at. If you saw a row of black coffins and a row of red babies, you would be able to remember, even after a long time, that this chart was about deaths and births. But the red curve and the black curve could have meant births and deaths as well as the production of wine and shoepolish" (Neurath 1991, 1, quoted in Jansen 1996, 152). The symbols used also often conveyed information about the emotional state of the person represented. Thus, Arntz's linotype of the unemployed man, reminiscent of the figures in Alma's portrayal of the *chômeurs*, shows him slouched and despondent, in contrast with the alert and upright employed workers in other symbols (see figures 1 and 5).[9] Attention was paid to the portrayal of light and space, so that, for example, in the representation of infant mortality rates, the interiors of

8. Multiplying the number of symbols made the comparison of quantities easier than did increasing areas: "That a square has twice the surface size as any other can only be computed, but not recognized by eye. However, two squares aligned with each other can immediately be compared with such an isolated square in terms of quantity" (Neurath 1991, 388, quoted in Jansen 1996, 151).

9. Skopec (1996, 160) points out how this wealth of detail was made possible by the classical form of representation involved and was considerably greater than that obtainable in today's digital media: "Contrary to the wishes of many artists, designers' and developers' presentation standards are being established through CD-ROM, computer games and on-line applications, e.g. 640 x 480 pixels, which falls short of the quality required for differentiated visualisation. And even if there is hope for (much) higher resolution in the future, it will never provide scope for such varied differentiation in the representation of symbols as is achieved with ISOTYPE visual presentations."

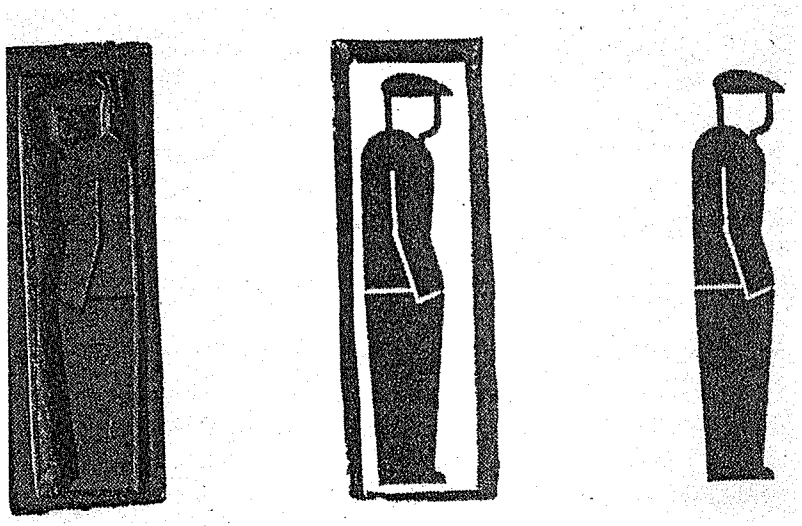

Figure 5 Gerd Arntz, linocut and impression of the symbol "unemployed." From Arntz and Broos 1979, 12.

wealthy homes were brighter and more spacious than those of the homes of poor children (see figure 6).

The pictorial graphics divided up the picture plane in a systematic manner. When necessary, changes in time were represented along the vertical dimension, and changes in quantity along the horizontal, a principle maintained throughout (see figure 7). Often, an illustration was included in the graphic to enliven the whole or reinforce a particular point (see figure 8). Sometimes, colors were used to make distinctions between, say, social and national groups (see figure 9), and when only black and white were used, differences were portrayed by, for example, different headgear or dress.

In keeping with Neurath's physicalist view of the economy, there is absolutely no mention in these statistics of money, costs, or value indices of any kind. The purpose of the symbols was to enable comparison, by an imaginary, possibly uneducated observer, of different social orders and different economic arrangements. What mattered, for Neurath, were the material conditions of life, the living standard (*Lebenslage*), as represented by housing, nutrition, clothing, working hours, and less obvious measures such as the prevalence of suicide and

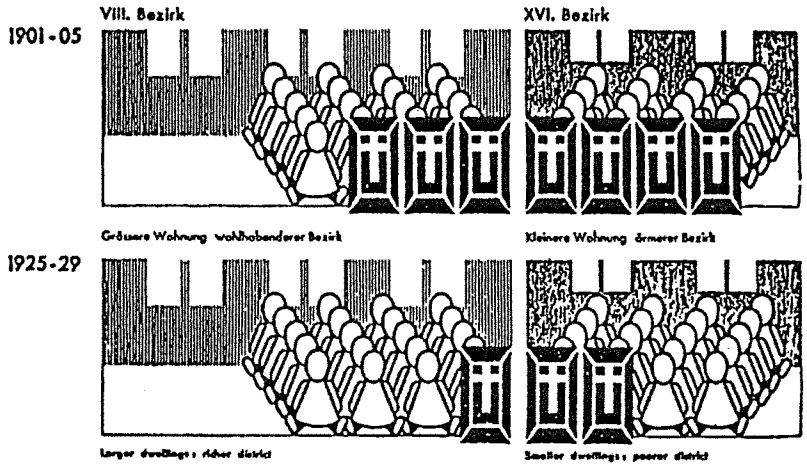

Figure 6 Infant mortality and social position in Vienna. From Neurath [1933] 1973, 221.

the availability of radio sets. To Neurath, it was these measures, more than any monetary measure, which were indicative of a society's well-being (*Lebensstimmung*). Steadfastly resorting to visual and architectural metaphors, Neurath created what he called economic and social "silhouettes," brief collections of statistics relating to physicalist features of the economy, with never any attempt to reduce them to a single index (see figure 10). Elsewhere, illustrations of how war reduced seasonal variation in coal production or how the market led to destruction of coffee stocks for purposes of price maintenance bore an implicit critique of the market system and were intended to promote the need for planning (see figures 7 and 11).

The displays of the Social and Economic Museum, therefore, were an integral part of Neurath's political economy. They substituted for conventional economic statistics and avoided all questions of money value. They were intended to promote a new, socialist sensibility, to prepare the workers of Vienna for the upcoming revolution. They supported, and were supported by, Neurath's rejection of utility theory and the monetary economy. As art, they were flat images, deliberately lacking perspective. As economics, they were part of Neurath's attempt to stay at the surface and to focus on the physical, avoiding the speculative realms of utility theory and the role of the mind.

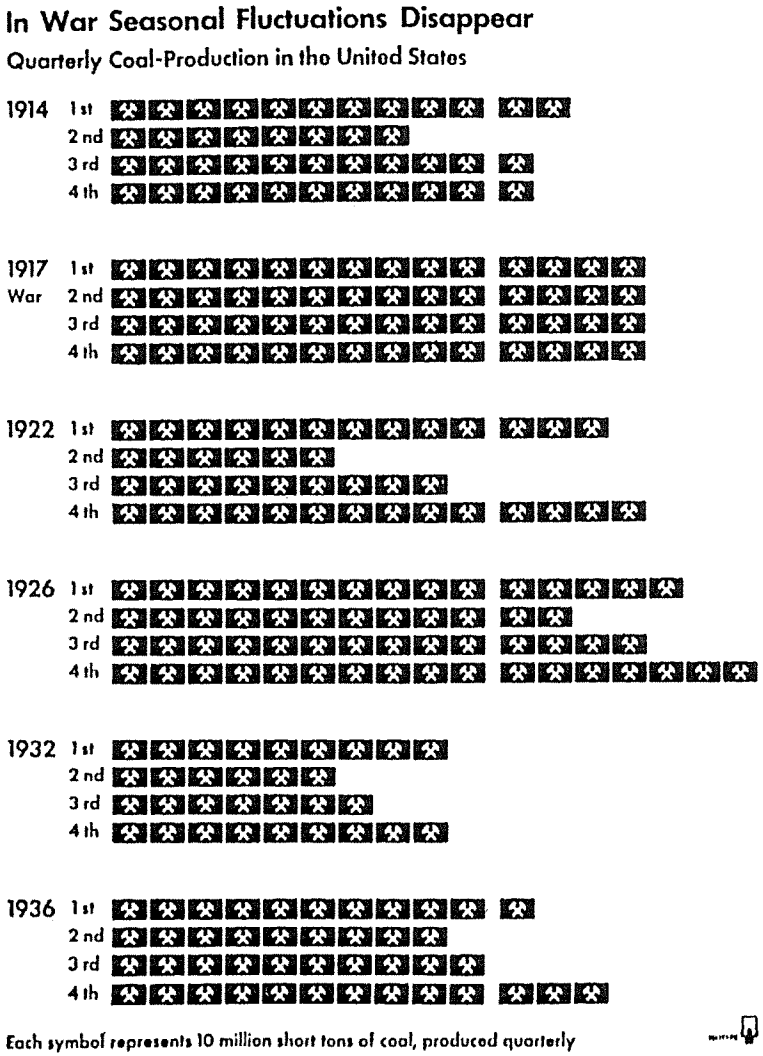

Figure 7 In war seasonal fluctuations disappear. From Neurath 1939, 87.

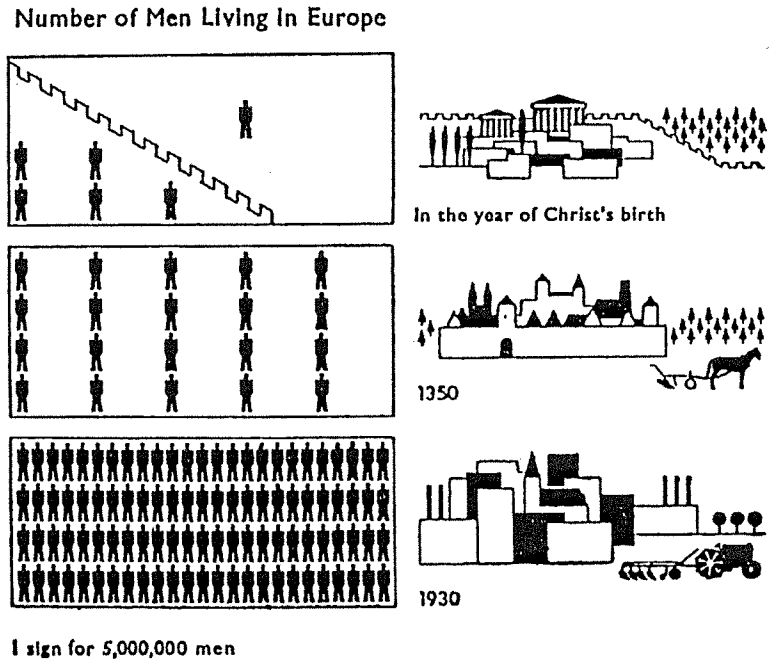

Figure 8 Number of men living in Europe. From O. Neurath 1973, 245.

In his impassioned 1944 monograph "Foundations of the Social Sciences," Neurath once again addressed the interrelations between the two areas, making clear how the use of art was an integral part of social science. As an empiricist, he wanted to eliminate all unempiricist expressions such as *mind*, *concept*, *mental*, *essence*, and, especially, terms appealing to transcendent or absolute qualities, such as *justice*, *truth*, and *falsity*. Terms such as these, he said, did not appear in physicalist language. Empiricist social scientists would limit themselves to phrases, basic observation-statements, which could be translated and recognized in all languages: "The old man lived in this stone building" or "Many trees have been found there." His pictorial images were intended to be visual statements of such a kind.

Again and again, however, Neurath repeats that the social scientists cannot be expected to start out tabula rasa. They will always, inevitably,

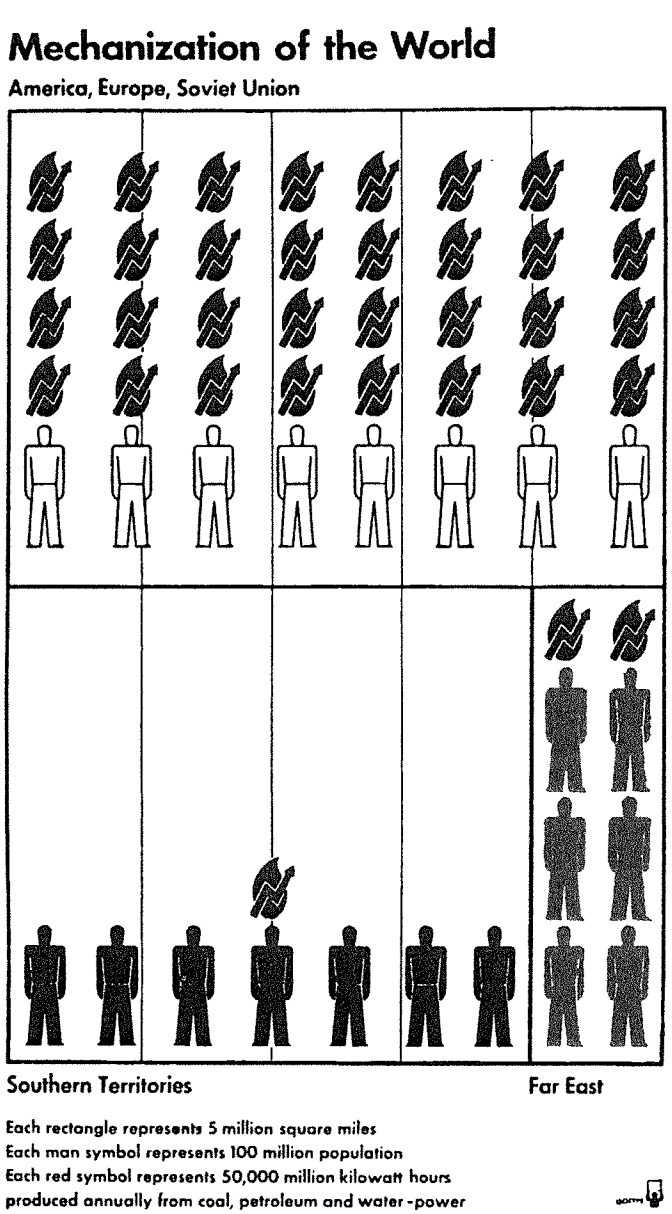

Figure 9 Mechanization of the world. From Neurath 1939, 48.



Figure 10 Silhouettes. From Neurath 1939, 61.

have to use terms that are vaguely defined. What was important was to develop an empiricist attitude, to assay sentences made by means of observation-statements. The most one could hope for in social science, epistemologically, was to have systems of basic statements that were coherent yet ungrounded in any "reality": the ship would always be afloat. In the social sciences, in particular, plurality and multiplicity are the order of the day. Neurath (1944, 13) thus remained at arm's length from Pareto and the discourse of optimization: "I suggest being suspicious wherever a writer tells us of an 'optimum,' except in cases in which a well-defined calculatory situation enables us to speak of an 'optimum.' It is just in the social sciences that we meet this tendency to speak often of an 'optimum.' This tendency is perhaps connected

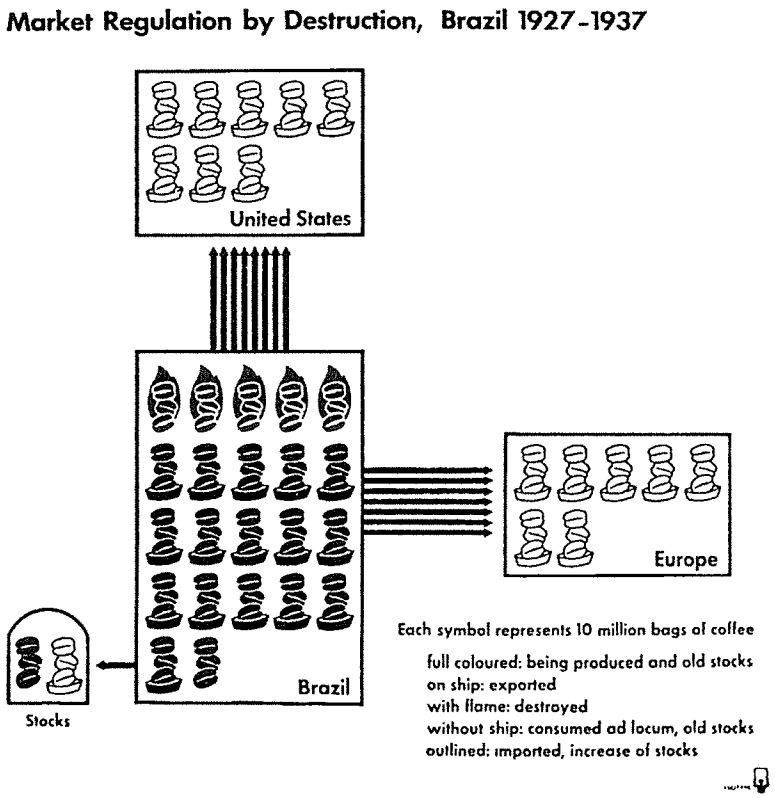

Figure 11 Market regulation by destruction, Brazil, 1927–37. From Neurath 1939, 77.

with a certain tendency to comprehensive determinism as Laplace formulated it in a very 'absolute' way." On the contrary, social scientists required a certain vagueness and even fuzziness, for only then could they cover the history of arts, the history of technology, the history of religion, and the history of church organization—that is, social life in all its richness.

Arguing that society had great freedom in choosing among its possible "futures," Neurath implicitly takes us back to some of the visual displays examined here and to their role as sources of social transformation. Social "silhouettes" allow one to compare different social situations without speaking in terms of a single indicator, whether that be utility, happiness, or the value of output. Multidimensional comparisons of this kind, he insists, are meaningful to anthropologists who study tribes without money. They are a way of transcending the local, contextual concern with money reckoning, of saying something with meaning for "mankind." He takes us to back to the Brazilian coffee: "Let us start with the statement that the traditional market society leads to the intentional destruction of milk, coffee, wheat, etc. in periods of hunger and starvation. It is plausible that there are people who imagine some new type of society in which no such destruction could take place. Discussion on rich and poor, on standards of living and similar items, arise" (36). And even though it is scientifically impossible to measure happiness or to make interpersonal comparisons, social engineers can provide descriptive (visual) statements on the happiness of individuals or of groups. They can provide silhouettes, the discussion of which may be of great importance to those making decisions that affect the social order and, thus, happiness. Neurath thus leaves us with a world in which there is neither formula, recipe, nor clear-cut prescription. There is only openness and indeterminacy, but therefore enormous scope for political decision. Neurath leaves us with a vision of society, the political economy, as a ship, afloat, yet capable, one might say, of choosing a course, using visual beacons as guide.

Coda

There was a certain poetry in Neurath's ultimately fleeing Holland and the Nazis on a boat. In February 1934, when Dollfuss sent in the troops against the Viennese Social Democrats, Neurath was in Moscow, on a contract with the Soviet regime's ISOSTAT Institute to help in their development of visual education. His offices in Vienna were searched; some of his material was confiscated and destroyed; and his colleague, and later wife, Marie Reidemeister, warned him against returning to Austria. He fled to Holland. There he was joined by Arntz, and they continued their activities at the Mundaneum Institute in The Hague. The highpoint of their efforts was the 1939 publication of the very successful visual collection *Modern Man in the Making*. In May 1940, when the Nazis invaded Holland, Neurath and Reidemeister fled, with nothing but the clothes they were wearing, from Rotterdam harbor, on an overcrowded lifeboat. When the fuel ran out, they floated until they

were picked up by a British destroyer. As enemy aliens they were interned on the Isle of Man and released only in early 1941, with the intervention of philosopher Susan Stebbing. With her help, and the help of G. D. H. Cole and others, the irrepressible Neuraths set up shop again, at Oxford, working on visual statistics, films, and documentaries. He died in December 1945.

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