

Humanization of Knowledge Through the Eye

Frank Hartmann

The ordinary citizen ought to be able to get information freely about all subjects in which he is interested, just as he can get geographical knowledge from maps and atlases. There is no field where humanization of knowledge through the eye would not be possible.

Otto Neurath¹

Introduction

In his day, Otto Neurath² certainly was a pioneer in many respects; his contributions are in socialist politics, political economy, the theory of science, sociology and social philosophy. However, especially remarkable was his revolutionary access to communication theory, based on investigating the role of communication in the “making of modern man”. Within the context of a scientific world conception (*Wissenschaftliche Weltauffassung*), he developed early steps in media literacy, conceived as a continuation of enlightenment, the struggle against metaphysics following a practical turn to the iconic form of communication. This resulted in a new pictographic design system: Isotype, or International System of Picture Education.

The starting point for this project was the Wiener Gesellschafts- und Wirtschaftsmuseum (Viennese Museum for Society and the Economy) founded in Vienna in 1924. With its mission of making social and economic relations understandable, especially for the uneducated, its means was the visualization of social and economic relations. This “museum of the future” developed from a specific socialist concept of adult education: to enhance existing scientific arguments with an “education through the eye”. To achieve this, Neurath – from 1927, with the help of graphic designer Gerd Arntz – further developed data graphics, the visual display of quantitative information, into pictorial statistics by what he called the “Viennese method”: the new “method of visual education,” an innovation by design in diagrams and films with Isotype animated diagrams. Icons of objectivity were crafted with the aim of visualizing the invisible economic factors that

underlie the functioning of society. One central aspect of the Isotype concept was threefold: a *serialization* of printed graphic material, an extended concept for *distribution* and a *recombination* of standardized elements of information – Isotype charts and maps, posters and objects, as well as whole exhibitions. To reach a multitude of people, the multiplication of display material was crucial. For the museum of the future, one should bring the museum to the people, not the other way around.

Neurath’s claim to a unity of science and society was linked not only to the issue of how unity was to be brought into the *theoretical order*, but also, and especially, to how *social compulsion* can be implemented in order to apply the social sciences for the good of society. Neurath’s question ran this way: How can scientists, as social engineers, contribute to better political and economic construction? His answer was based on one simple premise, as the general improvement in living conditions³ proceeds along the lines of very concrete measures: In regard to lodging, nutrition, clothing, working hours, he operated on a strictly scientific foundation of empirical observation and logical analysis.

1 Otto Neurath, “From Hieroglyphics to Isotype,” in: *Future Books*, vol. 3, London 1946, p. 100 – quoted and translated from the reprint in Otto Neurath, *Gesammelte bildpädagogische Schriften*, Rudolf Haller, Robin D. Kinross (eds), HPT, Vienna, 1991, p. 645.

2 These reflections on the visualization project “Isotype” by Otto Neurath (1882-1945) and his team in Vienna, The Hague and Oxford are based on the book that was edited with the assistance of designer Erwin K. Bauer (Vienna) and published as *Bildersprache* in German by WUV, Vienna, 2002 – www.neurath.at.

3 Cf. Otto Neurath, “Inventory of the Standard of Living,” in: *Zeitschrift für Sozialforschung*, Max Horkheimer (ed.), vol. VI, Paris, 1937, pp. 140-151.



Exhibition by the Wiener Gesellschafts- und Wirtschaftsmuseum at the city hall in Vienna, c. 1927, photo © Austrian Museum for Social and Economic Affairs, Vienna

Enforced by wartime conditions, intervention into economic interrelations signaled political feasibility. Neurath once remarked that war experiences make utopia socially acceptable, since far-reaching changes are realized in wartime virtually overnight, and unexpectedly as much as involuntarily. Economy is no order *in itself*, but precisely here, it reveals itself as extremely manipulable machinery. Neurath's project is embedded in the socialist struggle for a new society; he vigorously expressed ideas on how to present scientific results and to transfer knowledge into society. A certain nonchalance in dealing with the historical and philosophical encumbrances that appeared to weigh heavily on the scholarly generation of his time is balanced by Neurath's central claim: to engage science in the service of social change.

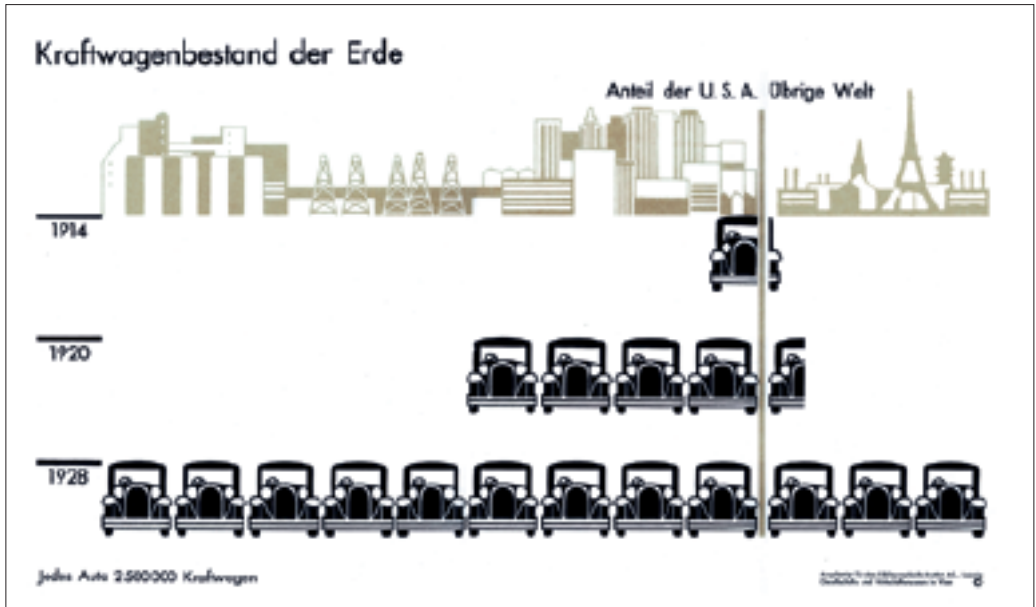
Historical Context

For Otto Neurath himself, it was the rigorous experience of World War I that convinced him of the feasibility of a scientifically sound social tech-

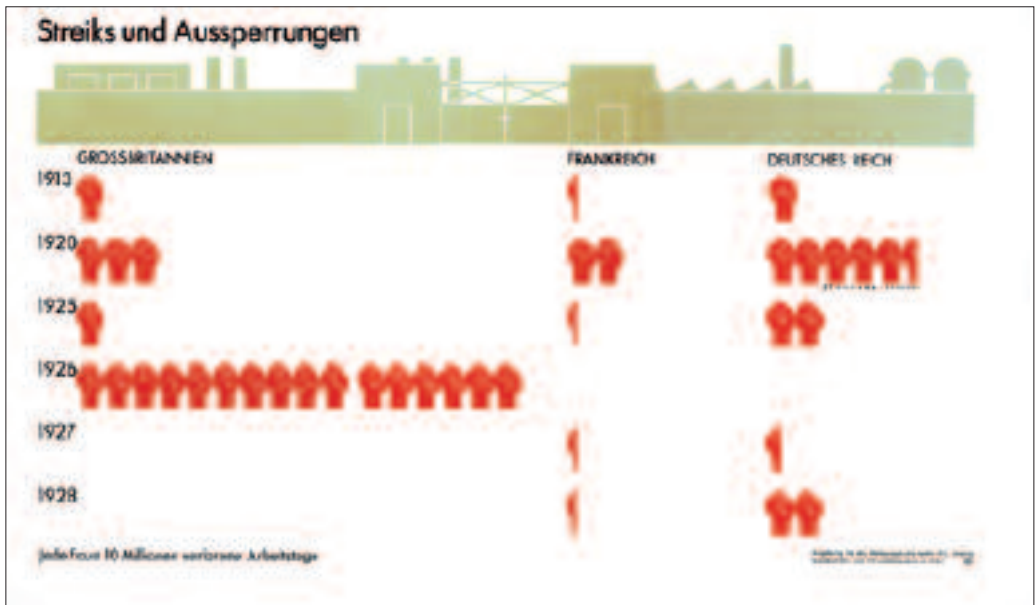
nology. He first addressed organizational issues in the Austrian War Department (1914-1918); in addition, he saw an opportunity to radically break away from abstract units (for example, money) as regulating society in a centrally administered economy of natural produce (*Kriegswirtschaft*). After 1918, Neurath engaged in the Munich Revolution and for a short time in 1919 became the president of the Bayrisches Zentralwirtschaftsamts in the Munich Commissary Republic. Because of these political activities, he was imprisoned and lost his teaching qualifications in political economy in Max Weber's Heidelberg Department of Sociology.

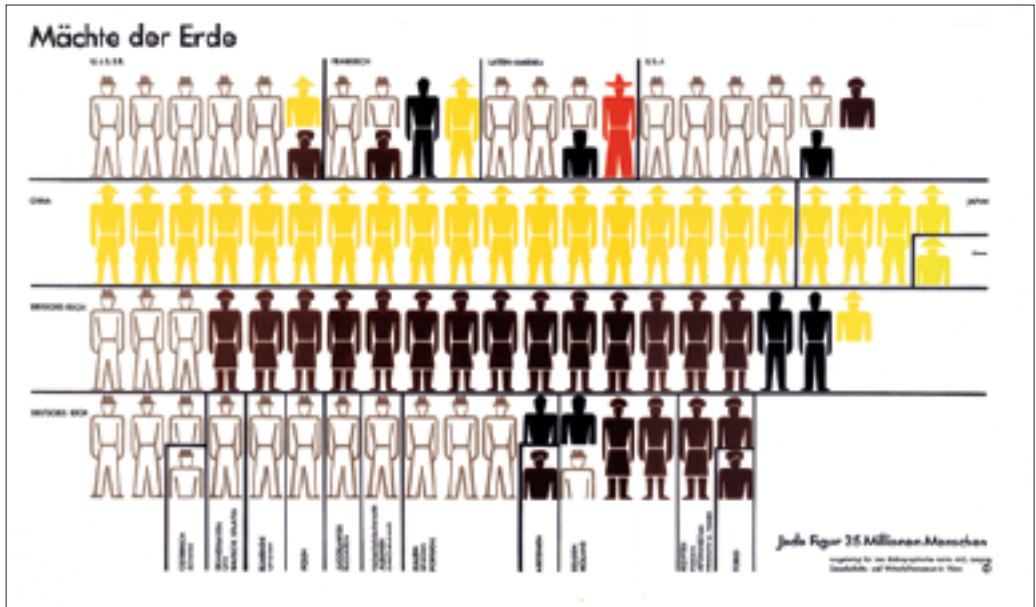
Back in Vienna, Neurath became secretary general of the *Siedlungs- und Kleingartenwesen* and received municipal funding for exhibitions on housing projects and public health care. From 1924 the Wiener Gesellschafts- und Wirtschaftsmuseum became the project-executing organization also for a number of successful international cooperative ventures. Among the exhibitions it

Stock of Automobiles in the World

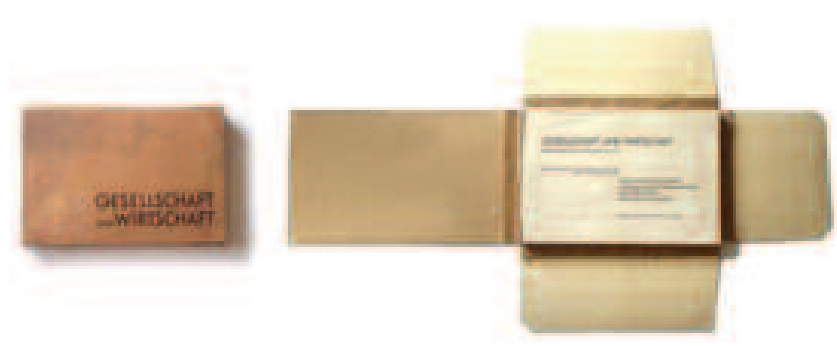


Strikes and Lockouts

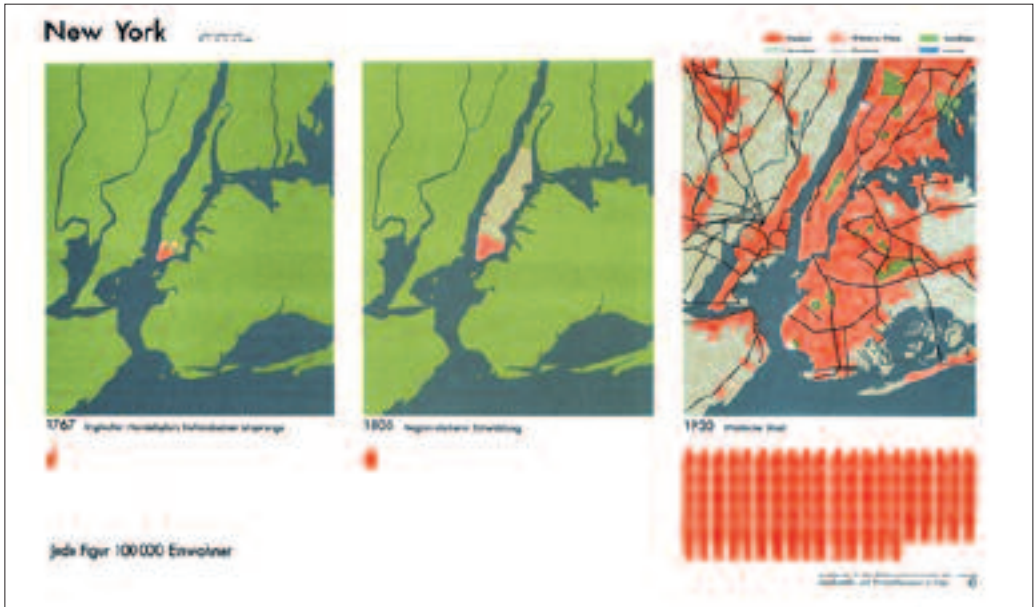




Otto Neurath and Wiener Gesellschafts- und Wirtschaftsmuseum (Viennese Museum for Society and the Economy), 1930, mechanically manufactured, chamois colored paper on playwood plate, c. 42 x 29 cm, *Gesellschaft und Wirtschaft. Bildstatistisches Elementarwerk*, Bibliographisches Institut AG, Leipzig, 1930, © Bibliographisches Institut & F.A. Brockhaus AG

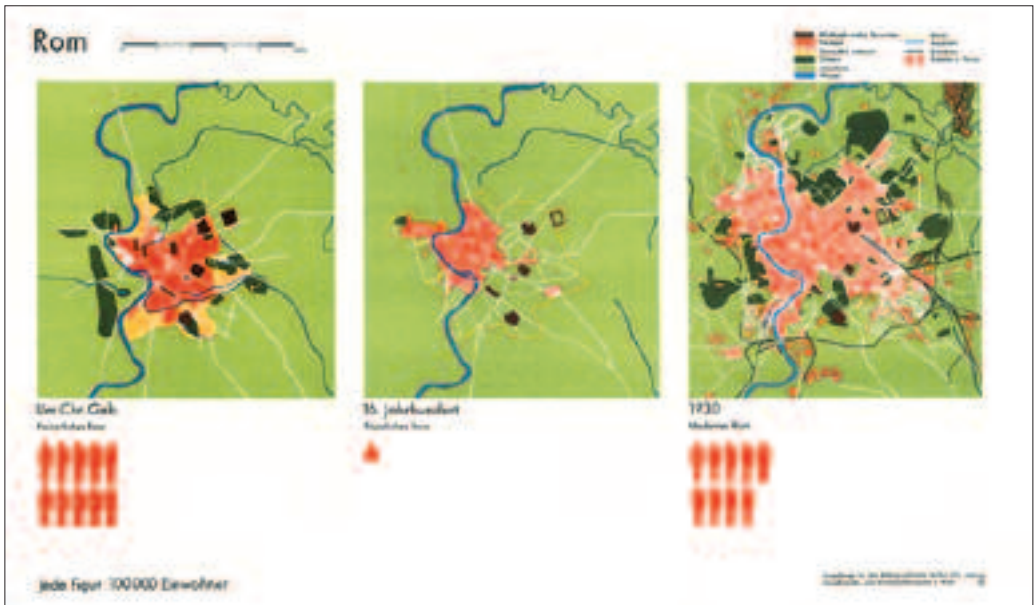


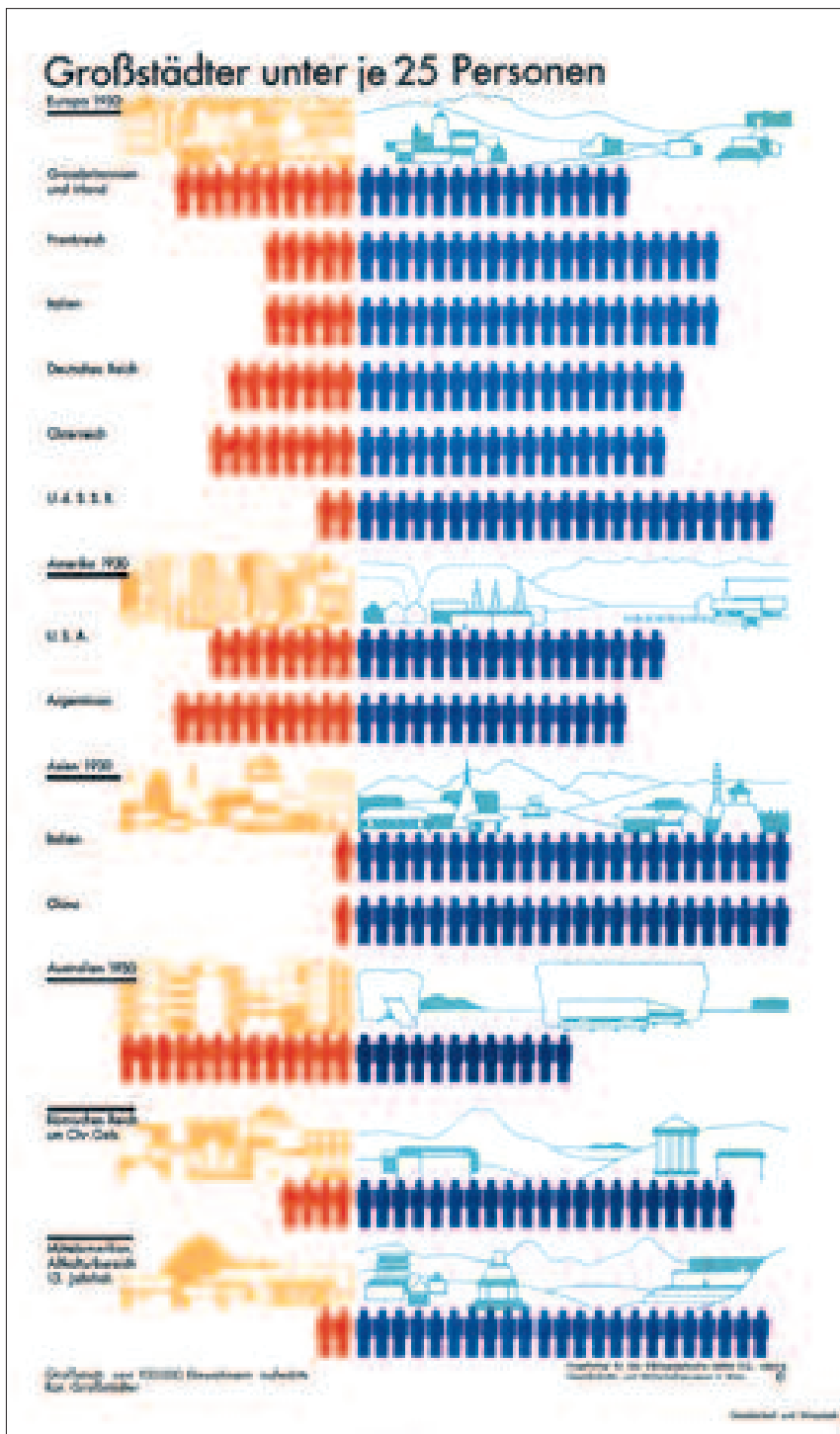
Gesellschaft und Wirtschaft. Bildstatistisches Elementarwerk, 1930, loose-leaf collection of 100 plates in a linen folder, photo © Erwin K. Bauer



Otto Neurath and Wiener Gesellschafts- und Wirtschaftsmuseum (Viennese Museum for Society and the Economy), 1930, mechanically manufactured, chamois colored paper on playwood plate, c. 42 x 29 cm, *Gesellschaft und Wirtschaft. Bild-statistisches Elementarwerk*, Bibliographisches Institut AG, Leipzig, 1930, © Bibliographisches Institut & F.A. Brockhaus AG

Rome





organized was the *GESOLEI* (*Gesundheit, Soziale Fürsorge und Leibesübung*) (Health, Social Welfare and Exercise) show at Düsseldorf in 1926, and it participated in the hygiene museum in Dresden in 1930.

In those days, Neurath's public lectures and printed articles indicate with surprising clarity to what a wide extent the roots of the Wiener Kreis (Viennese Circle) ought to be interpreted in the view of the social crises at the time of World War I and thereafter. (The Wiener Kreis was a term he coined in 1928 for the anti-metaphysical club, the Verein Ernst Mach.) Among his texts are *Pictorial Representation of Social Facts* (*Bildliche Darstellung sozialer Tatbestände*, 1926) and of course *Pictorial Statistics according to the Viennese Method* (*Bildstatistik nach der Wiener Methode*, 1931). The best representation of the pictorial work is to be found in *Bildstatistisches Elementarwerk*⁴ and the book *International picture language*⁵, not forgetting the opening volumes of the *International Encyclopedia of Unified Science* (University of Chicago Press, 1938), for which an illustrated supplement was planned but never realized.

Century of the Eye

In an attempt to break through the Cartesian/Kantian cognitive realm by way of configurations, Neurath followed the numerous attempts to find or reconstruct an *ideal language*. John Locke, one of many who tried, claimed at the end of the seventeenth century: "As the main objective of language in communication is to be understood, words are not suitable for this purpose." In search of a more effective medium beyond the arbitrary use of words, such a new medium will have received enhanced iconicity and, as in the case of Leibniz' *Characteristica Universalis*, will have led to an ideal language in which the degree of interpretation is kept as low as possible: As the greatest plan for the human mind, a new conceptual writing system would be based on a mathematical foundation. Later, Gottlob Frege's logicism called for new forms of expression, for which he introduced in 1879 the *Begriffsschrift* or conceptual writing, the main characteristic of which is the optimized use of both dimensions of the writing space (left to right and top to bottom). This heavily debated innovation should be put in the con-

text of a new world view, in which a turn was taken away from substantialist concepts toward an expression of logical relations. From Frege, the influence shifted to the Viennese Circle, which on its fringes included Wittgenstein.

But Neurath's question was: What is the pragmatic aspect pertaining to communication in everyday life? At the first level, communication within the *community of investigators* should be improved and, at the second level, general access to knowledge as well. The unified language of science is helpful at the first level, and the generation of a new pictorial language at the second. Once agreement has been reached on the fact that the epistemic reservoir is constantly increasing, the next step requires an answer to how the informational pool of modern society can be accessed. On this issue, Neurath's attempt was to create and systematize icons of objectivity.

The enlightening impulse was meant to lead to a new edition of the *Encyclopédie*, an illuminating global overview in theories and images – not as a compulsory standard but as an intellectual framework for the ever-changing conditions of the social production of knowledge. This was made explicit as a result of the *orbis pictoris* (*Opera Didactica Omnia*) by the Renaissance thinker Comenius (Jan Komensky), an encyclopedic *Pansophie* uniting mankind through common language, science and religion. Neurath was aware of the danger in construction of a "system of absolute validity". His encyclopedia was meant more as a provisional collection of epistemic stocks, contingent on usage and future systematization and precision. Hence, Neurath was concerned with a relational pattern focusing on knowledge, and this attitude was perhaps the most captivating aspect of his theorization. The offer was also issued to the collective in accordance with future users, and this precisely explains his focus on the communicative aspects and issues of representation. As a leading factor, Neurath's claim to a unity of science and society was linked not only to the issue of how unity was to be

⁴ *Gesellschaft und Wirtschaft. Bildstatistisches Elementarwerk – Das Gesellschafts- und Wirtschaftsmuseum in Wien zeigt in 100 farbigen Bildtafeln Produktionsformen, Gesellschaftsordnungen, Kulturstufen, Lebenshaltungen*, Bibliographisches Institut AG, Leipzig, 1930.

⁵ Otto Neurath, *International Picture Language. The Orthological Institute*, Kegan Paul, London, 1936 (Facsimile reprint: Department of Typography & Graphic Communication, University of Reading, 1980).



Exhibition by the Wiener Gesellschafts- und Wirtschaftsmuseum at the city hall in Vienna, c. 1927, photo © Austrian Museum for Social and Economic Affairs, Vienna



Work station in the office of the Wiener Gesellschafts- und Wirtschaftsmuseum, c. 1927, photo © Austrian Museum for Social and Economic Affairs, Vienna

brought to the *theoretical order* but especially to how that *social compulsion* could be attained in order to apply the social sciences for the good of society. Furthermore, systematizing pictorial representation towards a new pictorial language helps to provide general accessible overviews and to perceive connections that are otherwise distorted by abstract expressions, be it by words or figures.

“There are simple picture languages in which no other sorts of signs are used. What we have to do with here, however, is a picture language which is not able to give the story by itself, but only with

the help of the words of a normal language. [...] We have made one international picture language (as a helping language) into which statements may be put from all the normal languages of the Earth. We have given it the name ‘ISOTYPE’. [...] A Sign [...] makes us almost independent of the knowledge of the language, because pictures, whose details are clear to everybody, are free from the limits of language: they are international. WORDS MAKE DIVISION, PICTURES MAKE CONNECTION.”⁶ In several essays Neurath coined a suggestive maxim in connection with his

observation that we live in a “century of the eye” – but these pictures, plus their ability to connect what words and the typographical order of the alphabet (also according to the later media theory of McLuhan) allegedly tear apart, were yet to be constructed.⁷

International Picture Language

There have been picture-statistical methods that became more popular in the nineteenth century: to name but one, that of Michael George Mulhall. His acclaimed *Dictionary of Statistics* was published in 1893, but this approach of illustrating quantities in smaller or larger images found its critics. Among them was Willard C. Brinton, who published a new *Graphic Methods for Presenting Facts* in 1914. We assume that it was through Brinton that Neurath got the idea of representing quantities through a serialization of images the same size, instead of enlarging the image.

The new method of representation was constructed on the rules of iconic communication when Neurath concluded that general accessibility was more easily attainable with visual means than through campaigns against illiteracy. Thus, he well recognized that new means and techniques of communication had been developing for some time. It was the new technical media around the turn of the century that provided substantial aspects of a new cultural order of things:

“Modern man receives a large part of his knowledge and general education by way of pictorial impressions, illustrations, photographs, films. Daily newspapers bring more pictures from year to year. In addition, the advertising business operates with optical signals as well as representations. Exhibitions and museums are indeed offspring of this visual hustle.”⁸

Neurath, working with Arntz after 1927, was introducing a new symbolic tool, consisting of both new signs and a new code for using them. To achieve this, the demand for *publicity* formerly expressed in the bourgeois age of Enlightenment was also to be redeemed anew in consideration of the culturally revolutionized conditions of communication. This means nothing less than that all iconic (synthetic, sign-like, instead of linear decoded) communication serves to expand one’s lingual environment, or, paraphrasing Wittgen-

stein, *the transgression of the lingual limitation of my world*.

Historically, the pictographic writing system has been a tool for the underprivileged. Whoever propagates it infiltrates the dogma-centered verbiage of modern intellectuality. Neurath was convinced of the totally instrumental character of language; it is necessary to actively give form to language as a means of communication and, if need be, to radically replace it – yet always with the reservation that by and large, it is not possible to deliberately draw up conventions altogether. “Making language,” for Neurath as philosopher, meant actively translating reality and abstractions into metaphors or “speaking signs,” along with the possible result of a vast “thesaurus of symbolic tools” open to any changes in the sense of pragmatism.

Again, Neurath displayed sensibility in a promising direction: Visual methods should solve the problem of properly addressing the public, unsolved by eighteenth century Enlightenment, and free such communication from its restrictive educational ideal. According to the programmatic of a unified science, the humanization of knowledge is to be realized by visual means, as in what Neurath called *pictorial statistics according to the Viennese Method*. The method, to put it simply, was to create signs as close as possible to what they would stand for (depicting an object at the possibly highest iconicity, beyond the illustration of data) and to show a consistency of sorts: the same signs for the same things and serialized (instead of bigger) signs for higher quantities. The rules for the new pictorial script were simple, yet strict.

“A picture produced after the rules of the Viennese Method shows the most important details of the object at first glance; apparent differences must strike the eye immediately. At second glance, it should be possible to distinguish the more important details, and at third glance, whatever other details to be seen. If a picture gives further

⁷ It was not the iconic turn introduced by photography and other optical media that Neurath was after; regarding these aspects of new media, it was up to Marshall McLuhan who then stated in his *Understanding Media: The Extensions of Man* (McGraw Hill, New York, 1964, p. 12) that “We return to the inclusive form of the icon.”

⁸ Otto Neurath, “Statistische Hieroglyphen,” in: *Österreichische Gemeinde-Zeitung*, vol. 3, no. 10, Vienna, 1926, p. 328 – quoted and translated from the reprint in Haller, Kinross (eds), op. cit., p. 40.

information at fourth or at fifth glance, it should be rejected as pedagogically unsuitable according to the Viennese School.”⁹

In 1934 Neurath was faced with the emerging Austro-fascism and had to choose exile. At that time the Viennese Method for a visual display of quantitative information was called Isotype, International System of Typographic Picture Education, which also became the name of Neurath’s institute when it was moved to The Hague.¹⁰ A stimulus for the new acronym for the international picture language was BASIC, (British American Scientific International Commercial), the experimental basic English developed at Charles K. Ogden’s Orthological Institute.

Isotype was conceived as a picture language for teaching purposes and as a *lingua franca*, not a universal code. Its signs were constructed as clearly as possible in themselves, so they could be used without the help of words. The signs were arranged into “fact pictures” according to certain rules, which were set up by a “chief organization” – as Neurath called his workrooms at The Hague. Thus a picture language emerged from the consistent use of expert graphic design. Its elements or pictograms were reduced to the smallest possible detail of what they represented, for example start-

ing with the outline of a “man,” and if necessary, adding attributes to identify the man as a “worker,” a “coal miner” or an “unemployed person,” and so on. Perspective was abandoned in the pictures, illustrating details were banned and any use of colors would be standardized. Starting with *Gesellschaft und Wirtschaft* (1930), the picture books produced show the struggle to build up a visual system of rules and signs. As its goal, Neurath identified the “education of public opinion” and, on the utopian level, access to knowledge for all: “The Isotype picture language would be of use as a helping language in an international encyclopaedia of common knowledge.”¹¹

Neurath’s program was to introduce media literacy as enhancing a new form of enlightenment, replacing argumentative-linear decoding as the exclusive form of scientific argument through applications of iconicity. This somewhat corresponds to the therapeutic program of the *Wissenschaftliche Weltauffassung* (scientific world conception), which wanted to rid the world of the obnoxious lingual slag of tradition and metaphysics.¹² It should also be noted here that Neurath and his team not only established standards for presenting statistical data but also influenced generations of graphic and interface designers.

9 Otto Neurath, “Museum of the Future,” in: *Survey Graphic*, vol. 22, no. 9, New York, 1933, p. 463 – quoted and translated from the reprint in Haller, Kinross (eds), p. 257.

10 Marie Reidemeister, first Neurath’s colleague and then his third wife, actually coined the term “Isotype” while preparing to institute publications for Charles K. Ogden’s *Psyche Miniatures General Series: International Picture Language*, 1936, and *Basic by Isotype*, 1937. For one of the very few academic discussions of the Isotype principles, see Robin D. Kinross, *Otto Neurath’s Contribution to Visual Communication: 1925-1945*, Doctoral dissertation, University of Reading, 1979.

11 Neurath, 1936, op. cit., p. 65.

12 Incidentally, the aesthetics of surrealist painting and modern computer technology have refuted Neurath on this point: A surreal or virtual world of illusion can indeed be produced via photo-composing and morphing, as in digitally processed pictures that threaten scientific plausibility. See Julio M. Ottino, “Is a Picture Worth 1000 Words?,” in: *Nature*, vol. 421, January 2003, pp. 474ff.