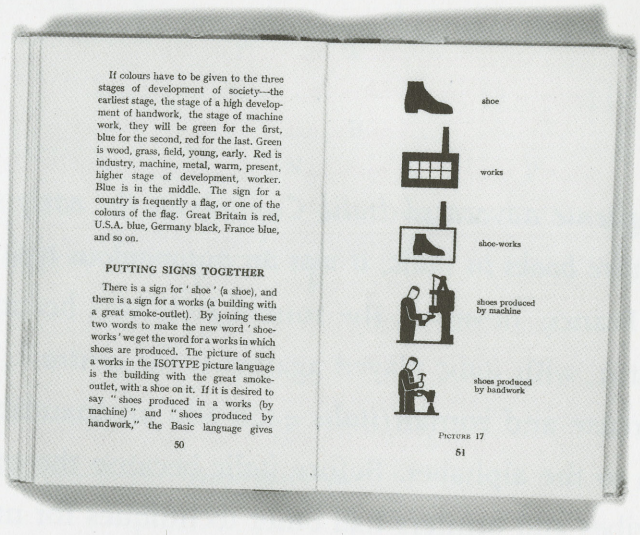
Otto Neurath, *International Picture Language*, 1936. Modeling Isotype after language, Neurath showed how to build compound signs out of elementary units. Neurath's work extended beyond the design of symbols, however, to include the use of icons in statistical charts. His theory of information design included the search for ways to organize information that maximize their visual impact. Collection of Smithsonian Institution Libraries, Cooper-Hewitt, National Design Museum.



If colours have to be given to the three stages of development of society—the earliest stage, the stage of a high development of handwork, the stage of machine work, they will be green for the first, blue for the second, red for the last. Green is wood, grass, field, young, early. Red is industry, machine, metal, warm, present, higher stage of development, worker. Blue is in the middle. The sign for a country is frequently a flag, or one of the colours of the flag. Great Britain is red, U.S.A. blue, Germany black, France blue, and so on.

PUTTING SIGNS TOGETHER

There is a sign for 'shoe' (a shoe), and there is a sign for a works (a building with a great smoke-outlet). By joining these two words to make the new word 'shoe-works' we get the word for a works in which shoes are produced. The picture of such a works in the ISOTYPE picture language is the building with the great smoke-outlet, with a shoe on it. If it is desired to say "shoes produced in a works (by machine)" and "shoes produced by handwork," the Basic language gives

50

shoe

works

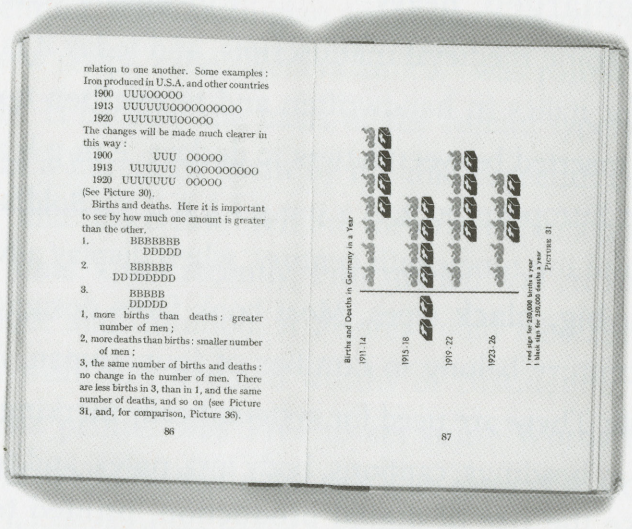
shoe-works

shoes produced by machine

shoes produced by handwork

PICTURE 17

51



relation to one another. Some examples:
Iron produced in U.S.A. and other countries
1900 UUUOOOOO
1913 UUUUUUOOOOOOOOO
1920 UUUUUUUOOOOO
The changes will be made much clearer in this way:
1900 UUU OOOOO
1913 UUUUUU OOOOOOOOO
1920 UUUUUUU OOOOO
(See Picture 30).

Births and deaths. Here it is important to see by how much one amount is greater than the other.

1. BBBBBBB
   DDDDD
2. BBBBBB
   DD DDDDDD
3. BBBBB
   DDDDD

1, more births than deaths: greater number of men;
2, more deaths than births: smaller number of men;
3, the same number of births and deaths: no change in the number of men. There are less births in 3, than in 1, and the same number of deaths, and so on (see Picture 31, and, for comparison, Picture 36).

86

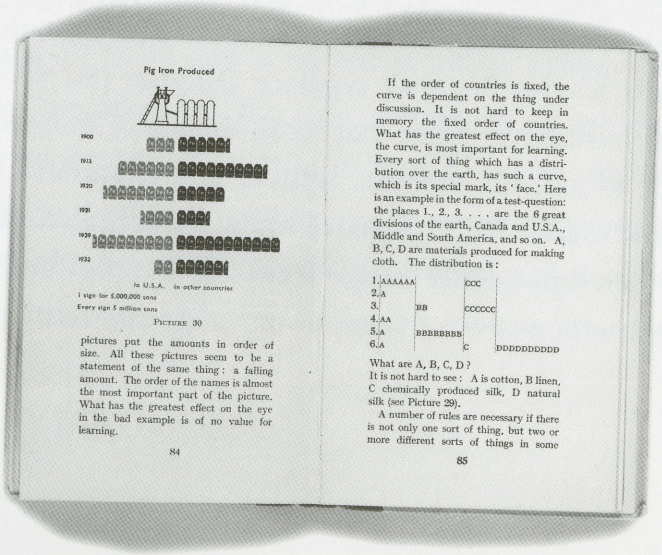
Births and Deaths in Germany in a Year

1911-14 1915-18 1919-22 1923-26

1 ref sign for 200,000 births a year
1 black sign for 200,000 deaths a year

PICTURE 31

87



Pig Iron Produced

1900
1913
1920
1921
1929
1932

In U.S.A. In other countries

1 sign for 5,000,000 tons
Every sign 5 million tons

PICTURE 30

pictures put the amounts in order of size. All these pictures seem to be a statement of the same thing: a falling amount. The order of the names is almost the most important part of the picture. What has the greatest effect on the eye in the bad example is of no value for learning.

84

If the order of countries is fixed, the curve is dependent on the thing under discussion. It is not hard to keep in memory the fixed order of countries. What has the greatest effect on the eye, the curve, is most important for learning. Every sort of thing which has a distribution over the earth, has such a curve, which is its special mark, its 'face.' Here is an example in the form of a test-question: the places 1., 2., 3. . . . are the 6 great divisions of the earth, Canada and U.S.A., Middle and South America, and so on. A, B, C, D are materials produced for making cloth. The distribution is:

1. AAAAAA CCC
2. A
3. BB CCCCCC
4. AA
5. A BBBBBBBB
6. A C DDDDDDDDD

What are A, B, C, D?
It is not hard to see: A is cotton, B linen, C chemically produced silk, D natural silk (see Picture 29).

A number of rules are necessary if there is not only one sort of thing, but two or more different sorts of things in some

85

Modern Hieroglyphs

 and  are from the standard symbol set designed by Cook & Shanosky Associates in collaboration with the American Institute of Graphic Arts in 1974.  and  are endorsed by the U.S. Department of Transportation (D.O.T.). They belong to an international hieroglyphics of public infomation.* Their ancestors,  and  , were created by the Viennese philosopher and social scientist Otto Neurath in the 1920s. Neurath and his colleagues constructed a universe of people  ,  ,  ,  ,  places  , objects  ,  ,  , and actions  ,  , . He called his system Isotype  , the International System of TYpographic Picture Education.**

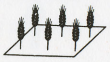
Although Neurath advocated the use of  in transportation signs, his primary interest was in presenting social statistics in textbooks, posters, and educational museums. In Neurath's charts, a given symbol, such as  , represented a quantity of people or things; a series () of symbols represented a larger number of objects. Thus a visual, perceptual Gestalt replaced abstract numerals in  charts. Anticipating Edward Tufte's later writings on the display of data, Neurath developed practical guides for representing #'s in a visually accessible way.

As a member of the Vienna Circle of philosophers in the 1920s, Otto Neurath was a founder of logical positivism, a theory that brought together two opposing modes of inquiry: *rationalism*, which studies reality through logic, geometry, and mathematics; and

empiricism (or positivism), which claims that observation is the key to knowledge.*** The  and its associated equipment—such as  and  —are the primary tools of empirical knowledge. The logical positivists attempted to analyze language into a minimal set of direct experiences, claiming that all languages can be reduced to a core of observations, such as big, small, up, down, red, or **black**. With  , Neurath translated a philosophical theory into a visual practice. The sign  is *positive* because as a picture, it is based in observation;  is *logical* because it concentrates the details of experience into a schematic mark. Neurath aimed to combine the mechanical empiricism of photography  with the rational structures of mathematics and geometry ●.

Although Neurath believed that pictures are objective and universal, the meanings of international signs are culturally specific. We understand, for example, that  and  represent *lavatory for men* and *lavatory for women*. Yet the reference to toilets is left unstated. A functional description, such as  and  , might denote the difference between these facilities more directly, but the signs' conventional meaning still would have to be learned.

We distinguish  as male because he is contrasted against the figure  , whose gender is marked by a stylized reference to a garment sometimes worn by Western women. In the D.O.T. system,  refers to "people" in general except where he is contrasted with  . Thus  does not mean *drinking fountain for men;* nor does  mean *elevator for men;* and nor does the sign  mean *waiting room for men*—  stands in for *man* generically. The only place  appears in the D.O.T. system besides on lavatory doors is in  , the sign for *ticket sales*. Here, where one person is offering a service to another, the designers deemed it appropriate to show  assisting  .

The stylistic principles of Neurath's  remain the basis of international pictograms today: *reduction* and *consistency*. Many Isotype signs are flat shapes with little or no interior detail, as in  ,  , and  . These flat silhouettes suggest a rationalized theater of shadows, in which signs appear to be the natural imprints of material objects—Plato's cave renovated into an empiricist  laboratory. When depth is expressed in  , isometric drawings  are used instead of traditional perspective. Parallel lines do not converge, and dimension is fixed from foreground  to background.

Consistency governs the stylistic uniformity of a symbol set. The D.O.T. system, for example, is a world of coordinated objects, including  ,  ,  ,  , and  . The sign system designed for the Munich Olympics in 1972 was the semiotic climax of international pictures: a geometric body alphabet  is deployed on a consistent grid:  ,  ,  ,  ,  ,  , and  .

The reduction and consistency of international pictures heighten their alphabetic quality. Neurath's  and  were a critique of writing that resembled writing, a utopian effort to transcend the limitations of letters by exploiting the visual characteristics of typography.**** Neurath's preferred typeface was **Futura**, designed by Paul Renner around 1926-27. Paralleling the machine aesthetic in architecture and industrial design, **Futura** is stripped of references to handicraft and calligraphy. Neurath conceived of  as clean, logical, free of redundancy: writing as a machine  for living in.

The current figure  might be called **Helvetica Man**, his style coordinating with the favorite typeface of post-war institutional design culture. A more inclusive pictographic land-

scape might be inhabited by variants of **Helvetica Man** that harmonize with other typefaces, such as Serif Man  , *Italic Man*  and *Cursive Man*  .

 and  are neither universal, self-evident, nor purely informational—like linguistic signs, they must be learned; like other styles of drawing, they are culturally specific. When we see  engraved over an airport door, we know she belongs to the language of public information, not the language of commerce. Thus we do not mistake  for, say, *brothel*, where  might purchase the services of  . The clean, geometric character of  and is loaded with cultural associations—"public," "neutral," "modern."

An international picture functions as a memento, a token for memory, a souvenir for words.  is *restaurant* as  is *Paris*. The very American  is hardly the geometric essence of *drinking alcohol in airports*, but like  , a cocktail is a useful cliché for storing a range of experiences. Likewise,  ,  ,  ,  ,  and  , taken from different international picture sets, are helpful tags for remembering objects we tend to forget.

Otto Neurath believed that  could transcend national boundaries and unify global social life. By translating a philosophical theory into a popular medium, he fathered a new breed of **ABCs**, whose progeny have populated public spaces across the industrial world. Since the birth of Neurath's  and  , designers and critics have framed new questions about visual and verbal writing that acknowledge the cultural basis of images, symbols, and experience. As we rethink the boundaries between words and pictures, Otto Neurath could serve as a model for the graphic designer of the next millennium,  the language worker equipped to use design and theory as tools for unearthing new questions and constructing new answers.*****

* This essay is based on research and writing initiated at The Cooper Union in 1986, with the exhibition *Global Signage: Semiotics and the Language of International Pictures*, curated by Ellen Lupton. The essay "Reading Isotype" was published in *Design Issues* III/2 (1986): 47-58; and in *Design Discourse*, ed. Victor Margolin (Chicago: University of Chicago Press, 1989). The global iconography of pictograms and logotypes was further explored by Ellen Lupton and J. Abbott Miller in "Critical Wayfinding," *The Edge of the Millennium*, ed. Susan Yelavich (New York: Whitney Library of Design, 1993), 220-32.

The pictorial symbols endorsed by the D.O.T. are documented in *Symbol Signs* (New York: American Institute of Graphic Arts, 1974). International symbols became a major interest of modernist graphic designers during the 1960s and 70s. Martin Krampen surveyed the theory and practice of the movement in "Signs and Symbols in Graphic Communication," *Design Quarterly* 62 (1965). *Print* devoted a special issue to the subject, November/December, 1962. On signage for the Olympic games, see Heiner Jacob and Masaru Katzumie, "Sign Systems for International Events," *Print* (November/December 1969): 40. The industrial designer Henry Dreyfuss published the encyclopedic *Symbol Source Book: An Authoritative Guide to International Graphic Symbols* in 1972 (New York: McGraw-Hill); an archive of his research materials is housed at Cooper-Hewitt, National Design Museum.

** Otto Neurath's colleagues included his wife, Marie Neurath, the Dutch graphic designer Gerd Arntz, and the American graphic designer Rudolf Modley, who brought Isotype to the United States after working with Neurath in Vienna. The Otto and Marie Neurath Collection is housed at the Reading University Library, Reading, Great Britain. Neurath's writings on Isotype include *International Picture Language* (Reading: Reading University, 1980), facsimile of the 1936 edition; *Basic by Isotype* (London: Kegan Paul, 1937); and "From Vienna Method to Isotype," in *Empiricism and Sociology*, ed. Marie Neurath and Robert S. Cohen (Dordrecht, Holland: D. Reidel, 1973). Critical works on Neurath and Isotype include *Graphic Communication through Isotype*, ed. Michael Twyman (Reading: Reading University, 1975), 7-17; and Robin Kinross, "On the Influence of Isotype," *Information Design Journal* II/2 (1981): 122-30. Works by Rudolf Modley include *How to Use Pictorial Statistics* (New York: Harper and Brothers, 1937); *A History of the War, In Maps, In Pictographs, In Words* (New York: Penguin, 1943); and *Handbook of Pictorial Symbols* (New York: Dover, 1976).

*** Neurath explained his philosophy in "Empirical Sociology: The Scientific Content of History and Political Economy," in *Empiricism and Sociology*, cited above. On logical positivism, see Peter Halfpenny, *Positivism and Sociology: Explaining Social Life* (London: George Allen and Unwin, 1982).
On Neurath and his context, see William M. Johnston, "The Eclipse of a Universal Man," in *The Austrian Mind: An Intellectual and Social History, 1848-1938* (Berkeley: University of California Press, 1972), 192-95.

**** Attempts to reform the alphabet into a more accurate reflection of speech were documented by Herbert Spencer in *The Visible Word* (New York: Hastings House, 1968). Herbert Bayer discussed his own writing reform efforts in "Basic Alphabet," *Print* (May/June 1964): 16-20. Charles Bliss proposed a new hieroglyphic script in which each character would "show the outline of the real thing, directly connected with meaning" in *Semantography (Blissymbolics)* (Coogee, Australia: Semantography Publications, 1949).

***** Whereas Otto Neurath saw pictorial communication as an antidote to writing, other writers and designers have addressed the overlaps between visual and verbal forms. On rhetoric and visual practices, see Roland Barthes, "The Rhetoric of the Image," in *Image/Music/Text*, trans. Stephen Heath (New York: Hill and Wang, 1977); Gui Bonsieppe, "Visual/Verbal Rhetoric," *Ulm* 14/16 (1965): 23-40; Hanno Ehses and Ellen Lupton, *Design Papers 5: Rhetorical Handbook* (Halifax: Nova Scotia College of Art and Design, 1988); and Katherine McCoy and David Frej, "Typography as Discourse," *I.D.* 35 (March/April 1988): 34-7.