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Isotype: representing social facts pictorially

Article

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Isotype
representing social facts pictorially

Keywords: Isotype, Otto Neurath, pictograms, symbols, transformer, visual communication, graphic design, Red Vienna, decision making, economics

In developing Isotype, Otto Neurath and his colleagues were the first to systematically explore a consistent visual language as part of an encyclopedic approach to representing all aspects of the physical world. The pictograms used in Isotype have a secure legacy in today's public information symbols, but Isotype was more than this: it was designed to communicate social facts memorably to less-educated groups, including schoolchildren and workers, reflecting its initial testing ground in the socialist municipality of Vienna during the 1920s. The social engagement and methodology of Isotype are examined here in order to draw some lessons for information design today.

Background

Isotype is an acronym that stands for: International System of TYpographic Picture Education. It was first known as the Vienna Method of Pictorial Statistics, due to its being developed at the Gesellschafts- und Wirtschaftsmuseum in Wien (Museum of society & economy in Vienna), which opened in 1925. Some people suggested initially that it should be known as the Neurath method, after its initiator and chief theorist Otto Neurath (1882–1945), but he argued that it could not have been developed without the financial support of the municipality of Vienna (Neurath, 1982, p.25).[1] This is an important point because the Vienna Method was developed in the context of a unique period of municipal socialism between the world wars in Vienna, which was at that time effectively a separate state within the new republic of Austria. Under this administration, which came to be called 'Red Vienna', there was a strong emphasis on cultural and educational projects, hence the generous funding for the Gesellschafts- und Wirtschaftsmuseum.

It was not what one usually thinks of as a museum. In his opening statements about it Neurath declared that it was not a treasure chest of rare objects, but a teaching museum. The aim was to 'represent social facts pictorially' (Neurath, 1926) and to bring 'dead statistics' to life by making them visually attractive and memorable (Neurath, 1925, p.5). In order to do this the museum also innovated with interactive models and other attention-grabbing devices, such as metal maps covered with magnetic symbols, and there were even some early experiments with animated films.

The areas of society that were represented make clear how embedded the museum's work was in the context of Red Vienna. One basic intention was to explain to people how their municipal taxes were being spent. So, there were charts and diagrams about the new housing program, the fight against tuberculosis, and welfare of all kinds. This reflects the urgency of particular health problems in Vienna at that time and the notable public housing policy of the city. Neurath later explained the ideas behind the Gesellschafts- und Wirtschaftsmuseum:

> … understanding of all kinds of local planning needs some general understanding of social interrelations, history and comparative social engineering. (Neurath, 1942b)

The museum aimed to enfranchise people by explaining to them how they fitted into the world's complex of interconnections.

From his early years as an economist Otto Neurath had always taken statistics seriously. He was aware that historically they had sometimes been used in an undemocratic way but he felt that they could serve as a tool in the struggle for equality. He believed in the empowering potential of statistical information (Neurath, 1927).



Figure 1. Otto Neurath, 1938.



Figure 2. Gesellschafts- und Wirtschaftsmuseum, New Town Hall, Vienna. c.1928.

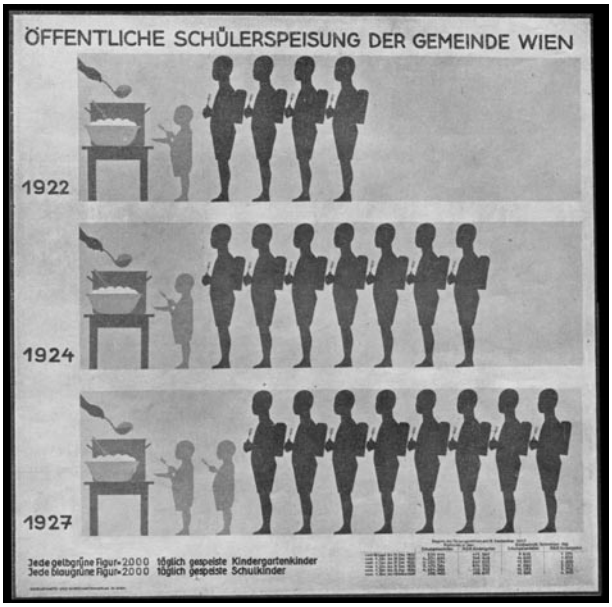


Figure 3. Chart showing increase in provision of school meals by Vienna municipality. From the exhibition 'Wien und die Wiener' (Vienna and the Viennese), 1927. This is quite an early chart but the Vienna Method is already established: each pictogram represents 2000 of either Kindergarten or secondary schoolchildren who have school meals. Here the source statistics appear on the chart (bottom right), but this practice was soon discontinued, as can be seen in figure 4.

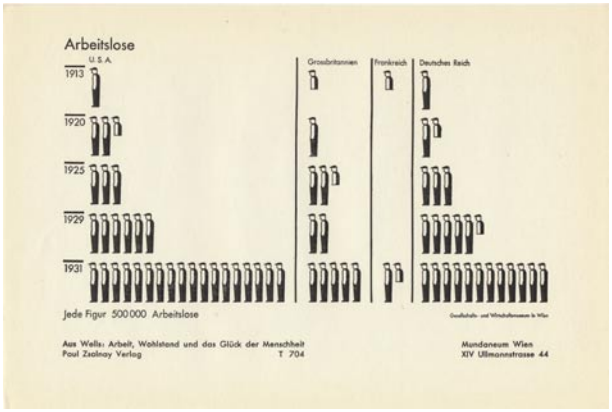
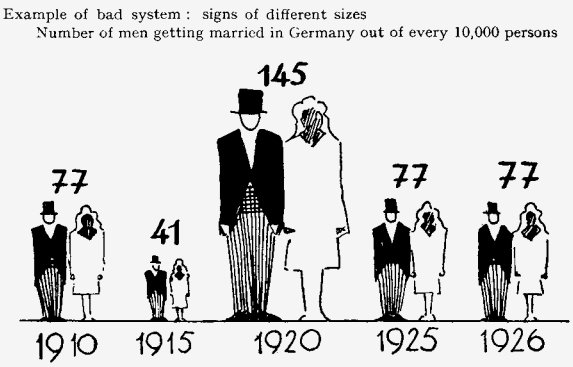


Figure 4. Chart showing relative unemployment in various countries. 1931. In comparison with figure 3, the graphic refinement brought by Gerd Arntz is evident.

In some ways Isotype offered an alternative to verbal language – 'Words divide, pictures unite' was one of Neurath's catchphrases. He saw the potential in using simplified pictures for informing less-educated adults, and schoolchildren, but also for international communication. The Isotype pictograms were intended to be signs that spoke for themselves and bypassed verbal language in some ways. Yet Neurath never pretended that Isotype was a complete language suitable for replacing verbal language: he considered Isotype to be an auxiliary language, which could only make coarse representations and which almost always needed some verbal elements to explain it (Neurath, 1936, pp.18–22). He summarized this concisely by stating: 'It is very important to stress the fact that the impressiveness of visual representation is in part balanced by the reduction of possible multiplicity.' (Neurath, 2010)

The Isotype method

Isotype was distinguished not only by its graphic qualities but also by the analytical principles behind it, which were articulated in writings by Otto Neurath. He was in a unique position to do this: as well as being an economist and social scientist, he was concerned both with movements in modern design and philosophy as the director of a housing association and a member of the Vienna Circle. He had also been fascinated since he was a boy in how information was conveyed visually.





Figures 5 & 6. Example of first bad and then good statistical charts, according to Neurath (1936, pp.75 & 77).

The principal rule of Isotype is that greater quantities are not shown by enlarging the same picture or symbol (which is still done often enough today) but by repeating the same-sized symbol. This was precisely in order to avoid what Neurath called 'unfathomable depths' (Neurath, 1929, p.306) – his argument was that there is no way (without the added numerical information) of accurately comparing the relative sizes of pictures in figure 5, whereas one can easily count the pictograms in figure 6, which becomes a kind of illustrated bar chart. Depicting things in perspective was almost entirely avoided in Isotype for the same reason.





Figures 7 & 8. Reference sheets from the Isotype 'Picture dictionary'. Both show how pictograms could be combined in a similar way that an adjective qualifies a noun. Some objects resisted typification: it seems impossible, for example, to design a recognizable pictogram for potato (shown here inside the middle sacks of the first two rows).

The graphical crudeness of the early charts, for which the pictograms were cut out from paper with scissors, was gradually replaced by the assured style of the German artist Gerd Arntz, whom Neurath persuaded to go and work in Vienna. Neurath recognized his work immediately as being adaptable to the needs of the Vienna Method, and they worked on the pictograms together. The legacy of these well-designed pictograms in today's public signage is clear, but, important as they were, they were not the whole point of Isotype. Arntz and Neurath attempted to make the pictograms universally understandable and as timeless as possible, but Neurath realized that this was unachievable in some cases and that certain pictograms would have to be periodically updated for continuing use in Isotype (Neurath, 1936, p.106).

Neurath sought out specialists and he built up a kind of prototype for an interdisciplinary graphic design agency, although they had no consciousness of doing design *per se*. The team was always concerned with the accuracy of data and research behind their charts, although the idea in designing them was to transform the data into a memorable, visual form. Another of the museum's catchphrases was: 'To remember simplified pictures is better than to forget accurate figures'. In Neurath's view Isotype had to be both informative and attractive in order to compete with modern entertainment. The material was not designed for specialists, but for ordinary people, so the priorities of the Isotype team were different than those of statisticians. It was necessary to round off numbers and make difficult decisions in interpreting them graphically but Neurath pointed out that nobody ever accused them of distorting data (Neurath, 1936, p.104).

Central to this process was a person they named the 'transformer', who analysed data and shaped it into draft graphic form. The principal transformer from the beginning until the end of the Isotype Institute was Marie Neurath. The transformer was a 'trustee of the public', meaning that she had to balance the desire of experts to include every detail with the requirements of the user, who needed only enough to get the general picture. This was a prototype of the modern information designer. (See Kinross, 1981; Macdonald Ross & Waller, 2000; Neurath & Kinross, 2009.)

The name Isotype goes too far perhaps in calling itself a system: while it had rules, for the sake of consistency, it was open-ended and always being adapted to new tasks. Otto Neurath himself explained that

> the 'Vienna Method' is, unlike the usual graphic methods, not a machine into which one throws sequences of figures in order to get quantitative pictures. The 'Vienna Method' requires *creative, educational work*. (Neurath, 1931, p.185)

Furthermore, it would be wrong to think that Isotype always consisted of horizontal rows of people – see figure 9, for example. Isotype charts were not always statistical: from its early years the Gesellschafts- und Wirtschaftsmuseum produced pictorial information for avoiding industrial accidents (figure 10). Even these examples were not purely instructional: two alternatives are presented. This kind of comparison was at the heart of Isotype.

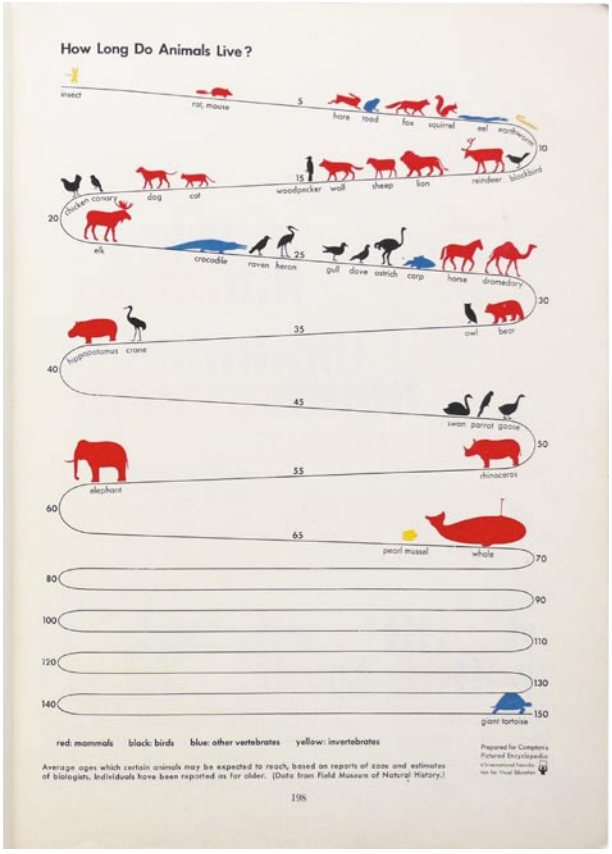


Figure 9. Chart made for *Compton's pictured encyclopedia*, 1939. An ingenious solution for showing animal lifelines.



Figure 10. Leaflet made for preventing industrial accidents. c.1927. 'Protect your hair from the spindle', reads the title.

A defining project of the first phase of Isotype was the monumental collection of one hundred statistical charts, *Gesellschaft und Wirtschaft* (Society and economy, 1930; figures 11–14, 17–18). Due to a generous commission, money was no object and the team expanded greatly for this publication: outside consultants in cartography, statistics, history and art history were hired. The scope of historical and economic interrelations was extended to cover the whole world, reflecting an encyclopedic ambition in the Enlightenment tradition.

The loose leaves of this collection were partly intended for use in schools. In connection with the socialist reform of education, Isotype material was tested in several schools in Vienna. Otto Neurath stated that these experiments were necessarily limited to immediate needs, but that they showed how this method of visual education worked for discussing high-level content at a low level of the school curriculum (Neurath, 2010).

As the original, political context of Red Vienna was left behind, when the Neuraths and other members of

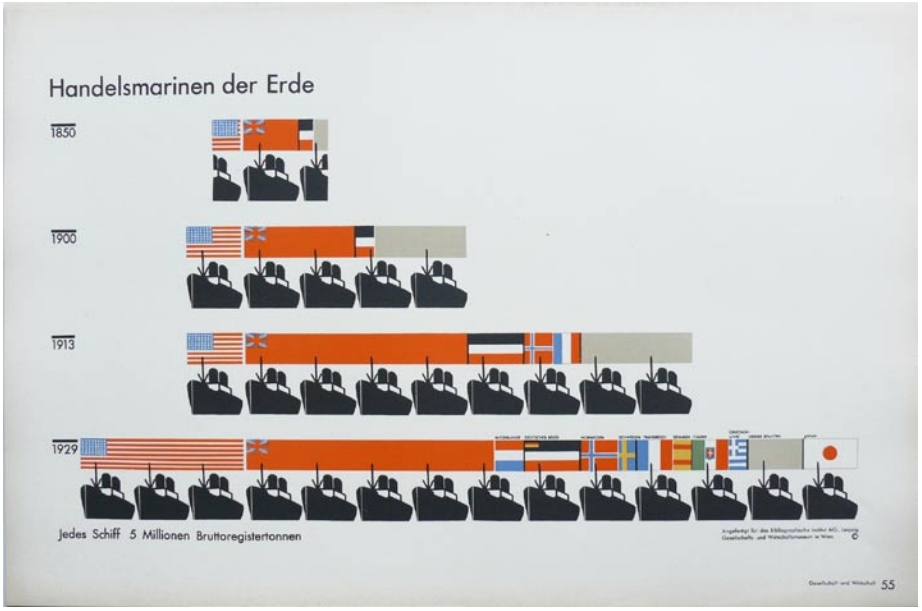


Figure 11. Chart from *Gesellschaft und Wirtschaft*. Leipzig: Bibliographisches Institut, 1930. The subject is 'Merchant navies of the world'.

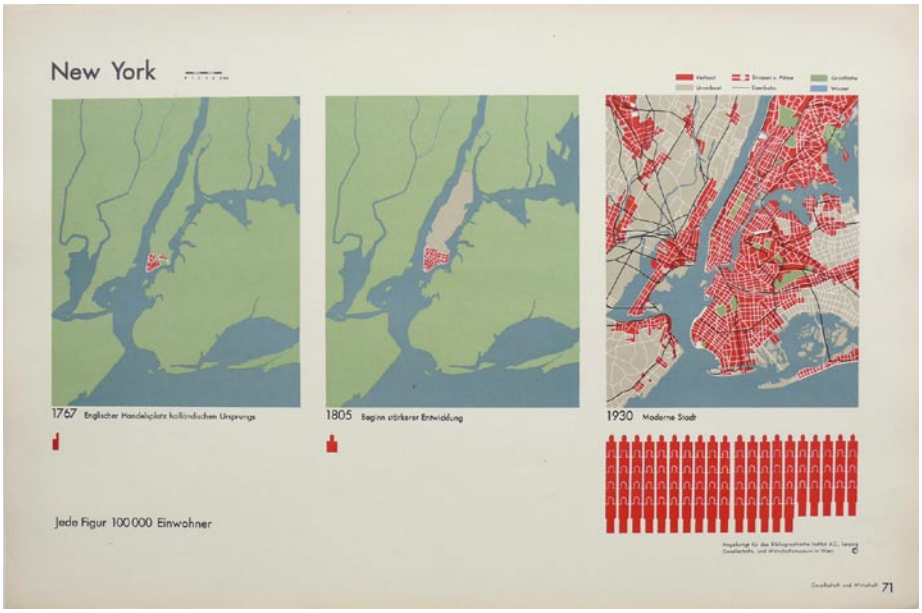


Figure 12. Chart from *Gesellschaft und Wirtschaft*, 1930: the historical increase in area and population of New York. This was one of a set of charts about the growth of cities, each of which could be compared with the others.

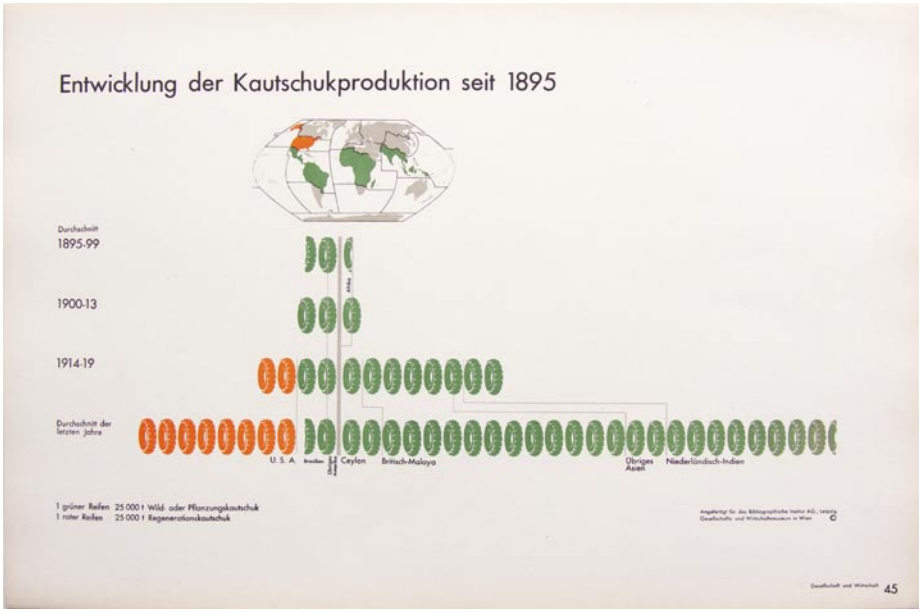


Figure 13. Chart from *Gesellschaft und Wirtschaft*, 1930: 'Development of rubber production since 1895'. Green tyres represent 25 thousand tonnes of wild or cultivated rubber, and orange tyres represent the same amount of recycled rubber. This chart is partly a comparison between the data on the left of the central axis (North and South America) and on the right (the rest of the world).

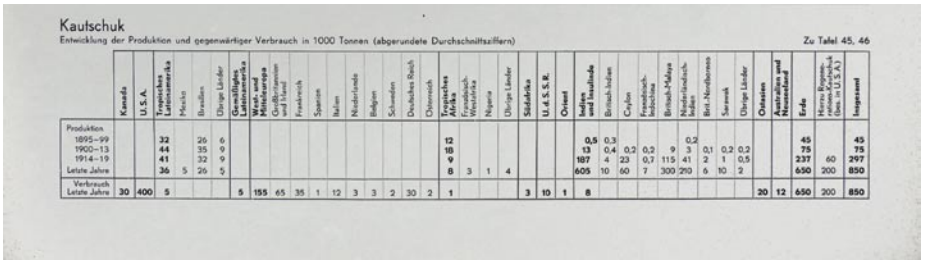


Figure 14. Source statistics for the chart in figure 13, included in an appendix to *Gesellschaft und Wirtschaft*. The pictorial chart is more immediately informative in graphic terms, indicating the general trend clearly.

the team were forced into exile, Isotype progressed more towards a goal of neutrality, of presenting facts for people to make their own conclusions. The Neuraths were in Britain at the beginning of the welfare state and 'visualized' a booklet about the new social security system there (figure 15). After Otto Neurath's death in 1945, Marie Neurath continued to direct the Isotype Institute until her retirement in 1972.

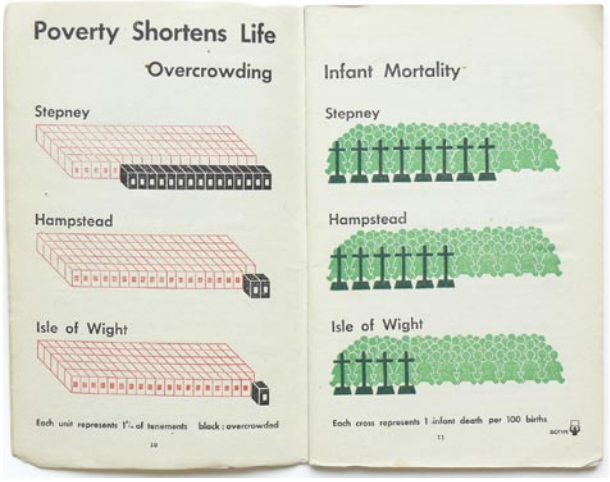


Figure 15. Pages from Ronald Davison, *Social security: the story of British social progress and the Beveridge plan*. London: Harrap, 1943. Produced with the support of the Ministry of Information.

A real test of the international ambitions of Isotype, as Marie Neurath saw it, was the project for Western Nigeria in the 1950s. She went on several lengthy visits to research the design of information for civic education and election procedure. As soon as she arrived, she threw away the plans she had already made and started again, thinking how to adapt Isotype for Africa. She went back with proofs of her booklets to test them out in real situations. Officials in Western Nigeria were convinced that the increased turnout in elections was due to the Isotype publications. (Figure 16)

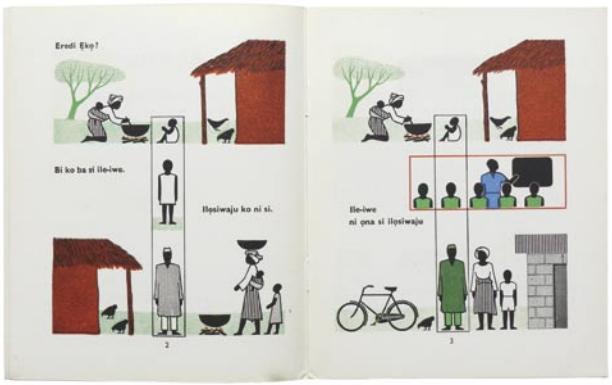


Figure 16. Pages from the Yoruba edition of *Education for all in the western region*. [Ibadan]: Western regional government, 1955.

Isotype and decision making

Otto Neurath described the goal of Isotype as 'to present so many charts and models that everybody gets sufficient material for visual argument' (Neurath, 2010). But he believed that it is a mistake to think that we can ever possess all possible information for enabling us to make the single, correct decision about anything; to think that would be an example of what he called 'pseudo-rationalism'. We simply have to make a decision based on what we know at any given time. In a letter to a friend he wrote:

> I do not speak of more than one 'right' solution, but of more than one solution within a realm [that] you may determine … science tells of many possibilities, … life asks for one decision. (Neurath,1942b)

Towards the end of his life he wrote:

> Experts can tell us of their results, but they cannot make decisions for us, since they are swayed by their own desires and individual outlook. Therefore whenever the fate of individuals and communities is at stake, we need some comprehensive knowledge to help us make our own decisions. It is for this that I think visual aids are so important, especially when we wish to educate ourselves and others in citizenship. (Neurath, 2010)

An economic conclusion

By way of conclusion, it seems appropriate to examine the relationship of Isotype to economic matters, considering the economic 'downturn' that engulfed the world as this article was being written. This should not be seen as a digression: Otto Neurath began as an economist and Isotype is permeated with his views on this subject. (See Nemeth, 2006)

With regard to the way Isotype charts were meant to convey their subject through self-explanatory pictograms, there was one exception – money (figure 17). While the disc can be seen as an Isotype pictogram – round like a coin, with no added detail – it also becomes a purely abstract circle. Figure 17 shows a chart from *Gesellschaft und Wirtschaft*: if one cannot read German, its subject would not reveal itself in the same way that the subject of the chart in figure 18 does. The Isotype team – and Neurath in particular – would perhaps have been content with this. Charts using this blank circle for money are rare in Isotype work (only eight of the hundred charts in *Gesellschaft und Wirtschaft* feature it); it was part of the philosophy behind Isotype that the charts should deal with objects of more intrinsic meaning to people – the material of life. In Neurath's economic theory money had no value in itself, only the valuations we place on it. (See figure 19.)

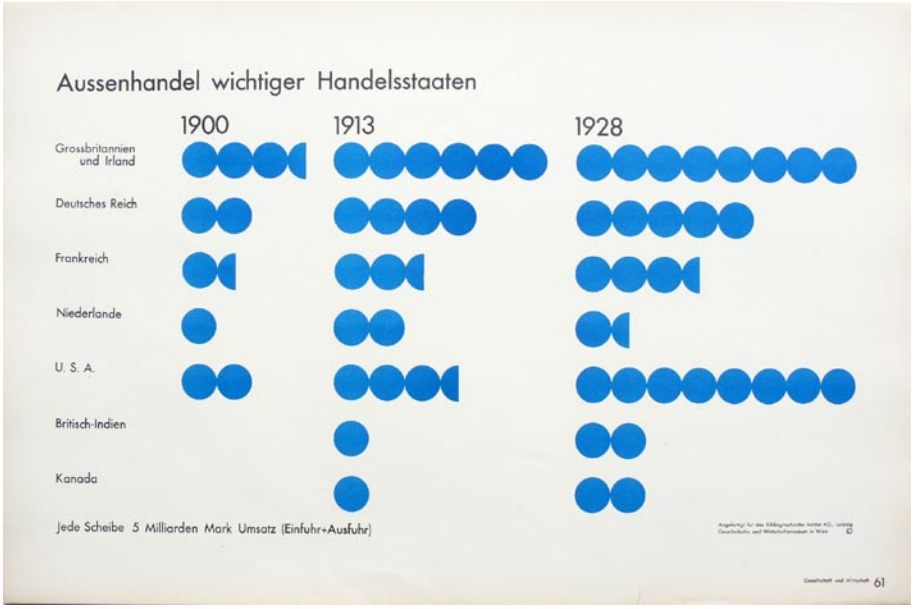


Figure 17. Chart from *Gesellschaft und Wirtschaft*, 1930: 'Foreign trade of important trading nations'; each 'disc' [not 'coin'] represents 5 million marks turnover (import+export).

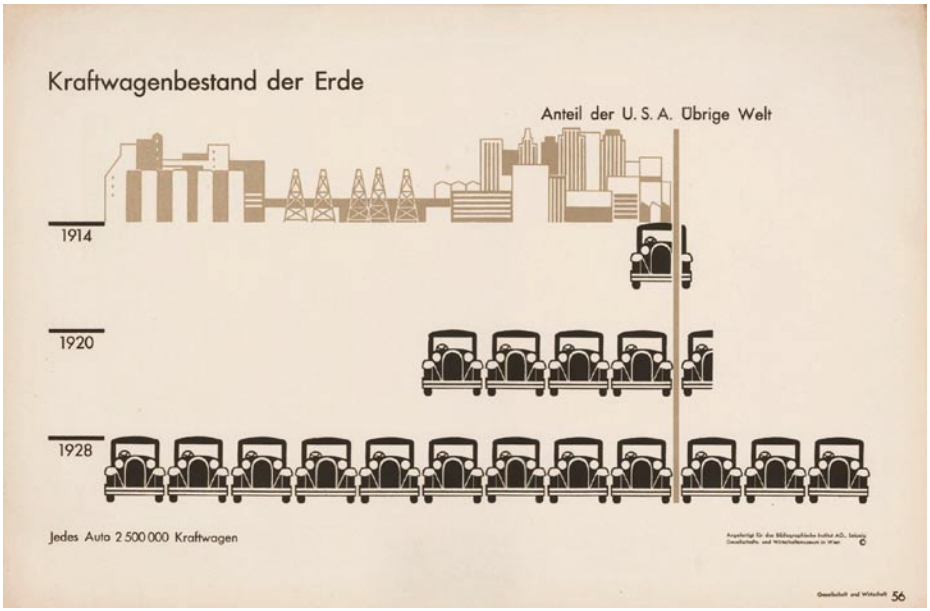


Figure 18. Chart from *Gesellschaft und Wirtschaft*, 1930: 'Numbers of motor vehicles in the world' (USA and rest of the world).

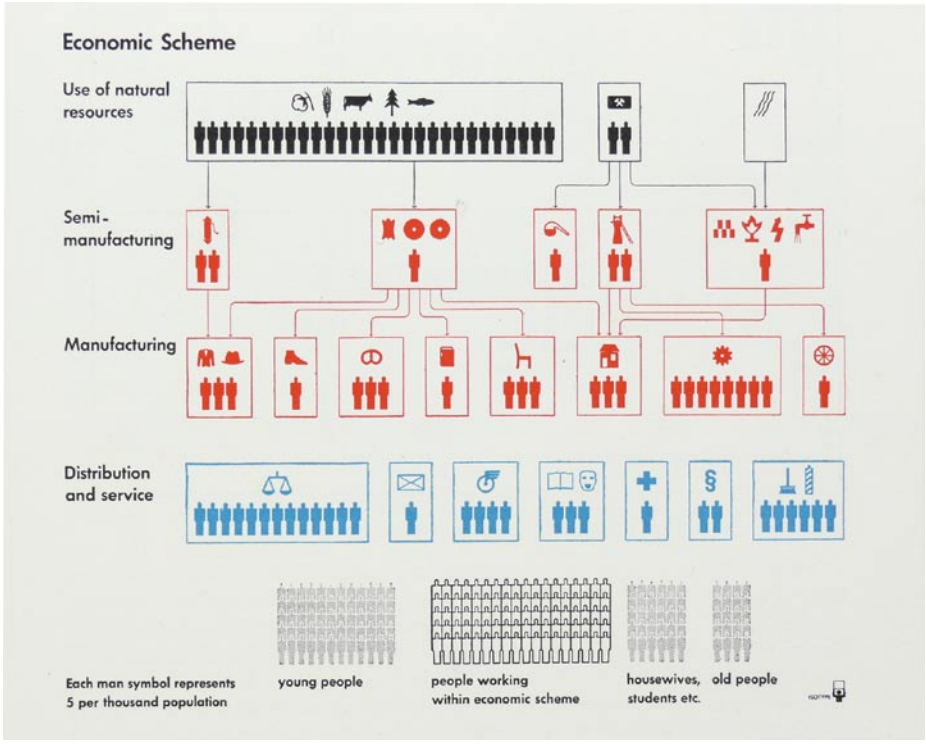


Figure 19. Isotype chart of an 'economic scheme' from Otto Neurath, *Modern man in the making*. New York, Knopf, 1939. Money does not feature in it.

This view was reflected in an intriguing essay that Neurath wrote during the last great depression, in 1932, called 'World planning and the USA'. It makes clear that much of what is happening today is not new. Neurath asked how we could explain to a Martian what an earthly economic crisis is:

> 'What do you mean by a crisis?' asks a man from Mars. At first he would not understand us if we tried to tell him what unprecedented confusion results when, in a space packed with shouting human beings and called the 'stock exchange', certain numerals on a board dwindle day by day. …
>
> But a man from Mars would be quick to grasp the significance of shelter, food, clothing, books, sports and the like. (Neurath, 1932, p.621)

This is a significant observation with regard to Isotype because these things, along with people, were suitable for being shown in picture language.

Notes

1. No distinction is made in this article between work done in the Vienna Method (1925–34) and work done after the name Isotype was coined in 1935. This follows the example of Otto Neurath (2010).

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