

Book Review:

Isotype: Design and contexts 1925–1971

by

Burke, Christopher; Kindel, Eric; Walker, Sue (Eds.)

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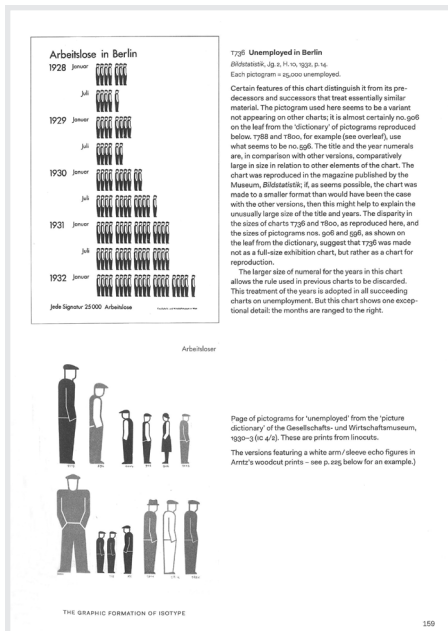
Per Molleup

Isotype, why not?

The term Isotype, an acronym for International System Of Typographic Picture Education, is a technique of data visualization introduced by sociologist, economist, and philosopher Otto Neurath. Originally called “The Vienna

School of Pictorial Statistics” and developed and practiced at the Gesellschafts- und Wirtschaftsmuseum in Wien (Social and Economic Museum of Vienna), 1925–34, Isotype’s purpose was to communicate societal information to visitors. In 1935, Neurath’s technique was renamed, and Isotype began its own life and was used for other purposes in other places.

Isotype builds on the idea expressed in Neurath’s often-repeated adage, “To remember simplified pictures is better than to forget accurate numbers” (p. 85). Therefore, Isotype is best known for Picture tables—graphic displays with rows of repeated pictograms each standing for a number of real world units. The picture tables embody the proposition that it is easier to compare quantities by comparing numbers of well-presented symbols, than to compare symbols of different size. Pictograms in the Isotype picture tables are scaled: in a display showing unemployment, each pictogram would stand for 1,000; 100,000; or 1 million – or another round number of unemployed persons. In picture tables, the reader must count the pictograms in different groups and multiply with the scaling factor to get the total amounts. The number of the repeated pictograms in a picture table is most often rounded off. Some Isotype picture tables feature half, quarter, or smaller fractions of pictograms. Even then, Isotype displays are typically not as precise as the numbers they represent.



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Males with flat cap and hands in pocket stereotype unemployed persons. Striking workers have crossed arms.

Isotype: Design and contexts 1925-1971 describes Isotype in a period delimited by 1925 when the Gesellschafts-und Wirtschaftsmuseum in Wien was founded and 1971 when the Isotype Institute in London closed. The book comprises 12 chapters dealing with the genesis and further development and design of Isotype. The book includes two kinds of information; it describes Isotype design principles, and it describes the process by which Isotype was developed and disseminated. To this reviewer the former part is the most interesting, while the latter part serves as a useful historical backdrop.

TEACHING MUSEUM

In the first of two central chapters, Christopher Burke covers the ten-year lifetime of The Gesellschafts-und Wirtschaftsmuseum in Wien including the formative years of Isotype. The idea behind Isotype predated the museum. Otto Neurath, sociologist, economist, and philosopher, had already applied charts with pictorial descriptions of quantities for the Museum für Siedlung und Städtebau, Museum for Settlement and Town Planning. Eager to educate by means of these didactic tools, Otto Neurath suggested a new museum to expand the ordinary population's understanding of national and world relations. The social democrat regime in Vienna understood the importance of education and provided the necessary financial support.

Otto Neurath invented Isotype, but more than that, he promoted it. Philosophically and organisationally trained in addition to being well connected academically and politically he spread the word and established the connections that were vital to the incubation of a new idea like Isotype. Neurath partnered his strong interest in education of ordinary people with his equally strong social commitment resulting in his belief that progress depends on knowledge, and knowledge should be delivered in ways that are both attractive and memorable – essential qualities of Isotype.

The Gesellschafts und Wirtschaftsmuseum in Wien was not a museum in the traditional sense of that word; and therefore consistent with Neurath's view that "The modern museum should be a teaching museum, a means of education, a schoolbook on a grand scale..." (p. 30). The Gesellschafts and Wirtschaftsmuseum in Wien consisted primarily of graphic charts explaining societal matters, first and foremost quantities. The museum introduced a number of advanced ideas to meet its audience. To accommodate prospective visitors the museum was open evenings and Sunday mornings. Also, the museum branched out at several places where visitors would be. At a certain time, the museum would exhibit at several different locations in Vienna including the town hall. A central corner shop museum open in the lunch hours had as many as two thousand visitors a day. At the corner shop special interactive knowledge machines were placed where visitors could test their knowledge – anticipating a distant, digital future. Exhibition material was reused and exchanged between permanent

and time limited exhibitions in several places. Along with its own exhibitions, the museum took part in fairs and exhibitions in Austria and abroad.

The museum also published books, pamphlets, and journals to reach its audience in time and space. *Gesellschaft und Wirtschaft*, Society and Economy, was a collection of 100 Isotype charts. *Fernunterricht*, distant teaching/learning, later renamed *Bildstatistik*, Pictorial Statistics, prefigured modern distance learning.

Three persons led the development of Isotype: Otto Neurath, a sociologist, economist, and philosopher; Marie Reidemeister, a German academic; Georg Arntz, a German graphic designer.

Austrian Otto Neurath's past career included his initiative to, and directorship of, the German museum of war economy in Leipzig during WWI. After the war, his presidency of the Central Office of Economics, in the Bavarian Soviet Republic, was followed by a conviction of assisting high treason and an eighteen-month, later suspended, prison sentence. In 1920, Neurath was back in Vienna to become the director of the *Forschungsinstitut für Gemeindegewirtschaft*, Research Institute for Co-operative Economy. In this capacity Neurath initiated a Museum for Settlement and Town Planning, which within a year – also on Neurath's initiative – was replaced by The *Gesellschafts- und Wirtschaftsmuseum* in Wien.

Marie Reidemeister (after 1940 Marie Neurath) met Otto Neurath before the start of the *Gesellschafts- und Wirtschaftsmuseum* in Wien, became his right hand, and continued working with Isotype after Otto Neurath's death in 1945. Most importantly, Marie Reidemeister played and developed the role of 'transformer'. Otto Neurath and Marie Reidemeister considered the 'transformation' of a message into a principle for a graphic chart the crucial part of the work with Isotype. Transformation was the link between science and graphic design. According to Marie Reidemeister: "We think out which is the point that has to be brought home, and then we try to do so in such a way that everybody will grasp it. We avoid distracting the attention from the more important issues." (p. 15). Also according to Marie Reidemeister, other designers impressed by Isotype would emulate the form but hardly master the transformation (p. 14). Today, the term 'transforming' is not used, but the substance is a natural part of the work of information designers engaged in data visualisation in news media and elsewhere.

Georg Arntz was a German artist working with woodcuts in precise graphic shapes, which caught the attention of Otto Neurath. Georg Arntz began working for the museum in 1928 and in 1929 moved to Vienna where he developed the schematic graphic form that became a signature quality of Isotype. In the process he also changed the technical production from paper cuts to printing from linocuts.

Three conditions for launching Isotype were present. First, a strong-minded initiator with a firm social and educational commitment who was well connected politically; second, highly qualified principal collaborators; and third, a friendly political market.

Partly inspired by the political winds and the following possible need for a foothold outside Austria, Otto Neurath established in 1932 the affiliate Mundaneum to take care of international relations. In 1932 and 1933, Mundaneum established branches in Amsterdam and London respectively. In 1934, the International Foundation for the Promotion of the Vienna Method of Visual Education was established in The Hague. Later in 1934, when the political situation in Austria and Vienna as envisioned by Neurath became dangerous, he, his wife Marie Reidemeister, Georg Arntz, and two other collaborators moved to the Netherlands. The Gesellschafts- und Wirtschaftsmuseum was closed. Part of its material was already transferred to Mundaneum. The rest was seized by the new regime, not the first time a design initiative has been subject to political change. In 1940 the Neuraths moved on to England.

THE NETHERLANDS

Two chapters of the book deal with the continuous work in the Netherlands and England. In Vienna, Isotype had been a means to inform the visitors of the Gesellschafts- und Wirtschaftsmuseum. In the Netherlands the Neurath team had to earn their way from projects. Otto Neurath wrote two books in Basic English: *International Picture Language* and *Basic by Isotype*. Other jobs included production of a children's theatre puppet show and an art exhibition, *Rondon Rembrant*. Also, commissions resulted from Otto Neurath's frequent travels to the USA.

ENGLAND

When Germany occupied the Netherlands the Neuraths moved on to England, where Otto Neurath had been promised a teaching position at Oxford. The Isotype Institute was then established in 1942. The Isotype work in England followed two lines. The Neuraths wrote and designed a number of books for Adprint, a book packager who also published, and they worked on informative films together with British film producer John Rotha. The books dealt with the war effort and social policy. Apart from a couple of booklets this work included a three book series: *America and Britain*, *The Soviets and ourselves*, and *New Democracy*. Two chapters in *Isotype: Design and contexts 1925-1971* deal with film work and children's books respectively.

FILM

Documentary filmmaker John Rotha approached the Neuraths soon after their arrival in England to initiate a collaboration concerning films for the Ministry of Information. The first film, *A few ounces a day* about saving waste to be used in the war effort, was based exclusively on animated Isotype graphics. The Neuraths acted as de facto directors and Maria Neurath made a complete storyboard as well as the graphics to be animated. Later followed several films, where Isotype animations were combined with live action. A series of films that had significant results included, *Worker and*

warfront, which was shown for workers in factory canteens, *World of Plenty* and *Land of promise* which dealt with food and with planning respectively.

In 1945 Rotha established a special company, Unifilm, with himself and Otto Neurath as directors. After Otto Neurath's death Marie Neurath would continue the cooperation with John Rotha until 1948, when Unifilm closed down. In 1954 Marie Neurath contributed to a TV series, *The World is ours*, and in 1965 to a film *The physics and chemistry of water*.

The film work was not without problems. Some critics found that serious matters should not be treated through the genre of animation. The Neuraths complained when they did not have full control of the work, and Paul Rotha did not always find the necessary support for Isotype work from the Ministry. Professional designers recognise these kinds of problems. Otto Neurath also had some didactic reservations. Isotype on paper lets the viewer see and compare several displays concurrently in space, while film – working in time – doesn't provide that possibility. Also paper media, in contrast to film, gives viewers as much time as they want. Today video technology has solved this problem.

CHILDREN'S BOOKS

In her chapter about children's books Sue Walker rightly states that "The children's books produced by the Isotype Institute provide an excellent insight into Marie Neurath's work as a transformer and show that she had a particular skill in making charts and illustrations that were accessible to children of all ages." (p. 391). This chapter reaches beyond children's books: The account of Marie Neurath's approach is relevant to all designers concerned with data visualisation.

The children's book production took place from the 1940s into the 1970s. Otto Neurath took the initiative, but after his death Marie Neurath edited, wrote, and designed a large number of children's educational books, some of which were schoolbooks. Children's book series included *If you could see inside, I'll show you how it happens*, *Visual history of mankind*, *Visual science*, *Wonders of the Modern world*, and *Wonder world of nature*. The Isotype institute delivered both the text and design for these books. Illustrations would include pictograms and all kinds of explanatory drawings. In another series, *They lived like this*, the majority of the illustrations were drawings of contemporary artefacts. This series was co-written by external artists.

Marie Neurath's thoughts about the work with children's books are interesting to everyone working with data visualisation:

I had to ask myself: what are the essential things we want to show, how can we use comparison, direct the attention, through the arrangement and use of colour, to bring out the most important things at the first glance, and additional features on closer scrutiny. Details had to be meaningful, everything in the picture had to be useful for information. (p.395)

From a note addressed to the readers of the second book in the Visual history series:

Everything which would not help you understand the meaning, or which would confuse you, is left out. Colours are used only to help make the meaning clearer, never simply as decoration. This means that every line and every colour in these pictures has something to tell you. (p. 403)

U S A

Three factors obstructed Isotype's introduction into the USA. The timing was not good. It was the middle of the depression, there were several imitators (just competitors?) around, and there was Rudolf Modley, a former part-time employee in the administration of the Gesellschafts- und Wirtschaftsmuseum in Wien. Rudolf Modley would cooperate and compete with the Isotype team in Den Hague and Oxford, and challenge Otto Neurath's views.

A group of influential supporters worked together to get Otto Neurath and Isotype to the USA. When in 1930 there was an opportunity to use Isotype at the Museum of Science and Industry in Chicago, Otto Neurath recommended the employment of Rudolf Modley. Here and later Modley acted more independently than envisaged by Otto Neurath.

In 1934 the supporters founded the Organizing Committee for the Institute for Visual Education "to establish in the United States an organization which can develop and promote the graphic methods of presenting social and economic facts, which have been characterised by the Vienna Method as exemplified in the work of the Gesellschafts- und Wirtschaftsmuseum in Wien under the direction of Dr. Otto Neurath" (p. 307). When the organisation did not follow Modley's advice, he created his own company, Pictorial Statistics Inc. Otto Neurath and Rudolf Modley held differing views. Neurath wanted standardised pictograms designed centrally while Modley had a more relaxed view. Neurath explained:

That is to say, for our picture language one general list of a limited number of signs is needed for international use, and this has to be worked out by or under the control of one chief organization (This organization is now the ISOTYPE work-room at the Hague). (p. 332).

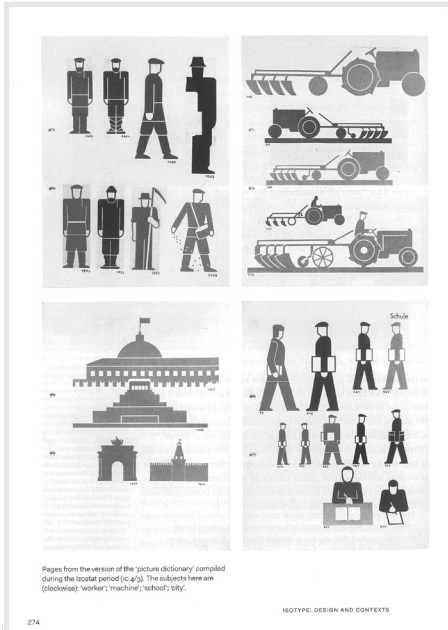
Also, Modley saw the pictograms as elements that could have their own life while Neurath saw pictograms as parts of visual arguments enabled by transformation. Modley was not interested in transformation. In line with this view he published symbols sheets with pictograms to be used by everyone and a book entitled, *1000 Pictorial Symbols* (1942).

Otto Neurath travelled to the USA several times and secured important commissions, primarily in the health sector. Isotype also delivered illustrations to *Compton's pictured encyclopedia* (1939) and Otto Neurath wrote *Modern man in the making* (1939) for Knopff publishers. After Neurath's death Marie Neurath wrote an essay on Isotype for Henry Dryfuss's *Symbol Source Book* (1972).

R U S S I A

The Isotype team's efforts in Russia took place from 1931-1934. Russia did not want to commission Isotype work from Vienna. Instead, they wanted Isotype staff to help establish a Soviet institute. A special organisation named Izostat was established with Otto Neurath as one of two directors, and several Isotype staff would join them for shorter or longer periods. The total staff at times would be as high as 75. A number of problems hindered

cooperation. The work primarily dealt with visualising the established success of the first five-year plan 1928-1932 and the predicted success of second five-year plan 1933-1937. While The Vienna Method as practiced in Vienna was based on empirical facts, the Russians wanted forecasts to play an essential role. The estimates were often exaggerated. Another problem was that the Russians wanted naturalistic pictograms aligned with wanted Soviet realism. Also, the Russians wanted more, sometimes propagandistic, illustration. The cooperation resulted in some publications with more or less Viennese influence. Georg Arntz made a series of charts for Izvestia, charts for exhibitions, and a number of publications more or less influenced by the Isotype team. One Isotype idea was used with a new meaning. In the Vienna Method black was sometimes used to illustrate worse, while red would stand for better. In Russian charts red would stand for Russia while black would stand for other nations.



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Isotype work for Izostat in Moscow characterised by Russian realism.
(original in color)

In 1934 the Russians wrote to Otto Neurath that the contract did not comply with Russian law and the amount due at the end of the contract would not be paid. The latter incident was a major blow to the Isotype organisation, which in Den Hague depended on paid work. Izostat continued without Isotype help until 1940.

A F R I C A

Some Isotype work in Africa took place from 1952-1958. Otto Neurath reportedly said that Isotype was not for the Viennese, but for the Africans (p. 449). In 1943 he worked on a proposal for an exhibition for the British Colonial Office entitled, *Human life in Africa*. This project did not materialize.

In 1953 a partnership between Buffalo Books, a subsidiary of Adprint, the Isotype Institute, and Purnell and Sons, a printing firm, planned and published the magazine *Forward* addressing the three British colonies Gold Coast (Ghana), Sierra Leone, and the Western Region of Nigeria soon to become independent. A trial issue and an issue number 1, dealing with culture, adventure, sports, and practical advice were published before the magazine was determined to be economically impossible in 1953.

colour, male and female, qualifying symbols, and guide pictures, down to pictograms and configuration. In the latter part Kinross codifies six types of displays dealt with by Isotype. This would have been a natural start of the chapter to be followed by pictograms. Apart from this peculiar arrangement the chapter gives a robust description of the elements used in Isotype. Kinross calls Isotype "a coherent approach to ordering material in graphic form" (p.107). It covers what we today call 'data visualisation'. In contrast to the remaining part of the book, Kinross offers a few critical remarks on Isotype.

Considering Neurath's interest in education it is remarkable that there exists no manual, no single, document explaining the Isotype design principles thoroughly. One reason could be that Isotype remained a work in progress. Another reason could be that Neurath did not want everyone to design visual displays, but rather to commission the displays from the initiators. So-called notes, single sheets each describing a design subject, were descriptive rather than prescriptive. They described current practice more than recommending what should be done. Also, Neurath's publication, *International Picture Language*, 1936, written in Basic English doesn't serve as a manual either.

Kinross's description of Isotype design gives a clear impression of Isotype being a work in progress. Pictograms, qualification, grouping of pictograms, use of colour, use of typography, and configuration would change considerably between 1925 and 1934, especially after Georg Arntz joined the team. However, this development did not always follow a straight line. Different principles were sometimes used concurrently; old design features were sometimes used after new design features were introduced. The development involved standardization, modularization, and simplification. Pictures would be reused and be combined; the use of colours would be restricted.

Kinross refers to the common misunderstanding that "quantified rows and columns" "might be typical of the work as a whole" (p. 142). Well, these picture tables and their pictograms are what most of us think about first when we think about Isotype. The picture tables and their pictograms are featured on the covers of publications and wherever Isotype is discussed. Kinross shows the width of Isotype by the following classification (p. 139).

Charts showing quantified material:

1. rows and columns [picture tables],
2. division of a whole (usually a checker-board),
3. geographically ordered pictograms and more diagrammatic charts,
4. quantities related to area (usually showing densities),
5. flows.

Charts showing non-quantified material:

Neurath broke down the picture table category into six sub-categories (p. 140):

- 1.1 comparison of total quantities,
- 1.2 where sizes of constituent parts are interesting, as well as total quantities,
- 1.3 where relative sizes of constituent parts are most important,
- 1.4 to make a shift particularly clear; alignment left and right to form an axis,
- 1.5 where the sizes of parts and of wholes are equally important; one compares both horizontally and vertically,
- 1.6 to allow comparison of parts and wholes, and to make a shift clear; especially important in showing changes over time.

A schematic drawing and an Isotype picture table illustrate each of these sub-categories.

While the fact that a large part of the text of this chapter is devoted to picture tables and pictograms may support the idea that Isotype first and foremost is picture tables, the book's numerous illustrations establish some balance. Isotype is both picture tables and a general approach to data visualisation.

In a chapter about pictograms, Christopher Burke confirms that a direct line from the Isotype pictograms to the pictograms used in transport and communication today hardly exists. However, qualities such as standardization, modularity, and schematization are parts of the Isotype heritage. Isotype pictograms worked in lines in picture tables to compare something, while modern pictograms in transport and communication simply point to the existence or condition of something. Otto Neurath, however, suggested that the Isotype pictograms could possibly also be used for public information signs. This application was not realised.

WHY NOT?

Isotype: Design and contexts 1925–1971 is a comprehensive introduction to the Isotype idea. The book's 12 chapters written by nine authors are well planned with a minimum of overlaps. While the main text goes into considerable historical detail, the illustrations present the elements and charts by which Isotype should be known and appreciated. The numerous illustrations – more than 400 – and their elaborate captions turn the book into a portable archive, which for everybody unable to access the Isotype collection at University of Reading will remain the most important Isotype resource.

Implicitly the book relays a well-known phenomenon: how a design idea born to solve one problem if successful becomes a

solution that looks for other problems. From informing the Viennese citizens the problem changed into finding potential outlets for the newfound method.

In the beginning of *Isotype: Design and contexts 1925–1971* Christopher Burke states, “The best way to bring these [the qualities of Isotype] to the fore is to examine it as a historical phenomenon in all the complexities of its contexts.” (p. 14). This is questionable. To compare is the basic function of Isotype. Isotype should itself be compared with competing data visualizing formats. How can we evaluate the virtues of airships without comparing airships with other airborne vessels?

We still need a balanced discussion of the qualities of Isotype. What exactly is the Isotype approach? How does it survive today? How does Isotype compare with the display formats that news media and others prefer today? What are the pros and the cons of Isotype compared with other more frequently used data visualising formats such as bar charts, bubble charts, and line charts? Understandability, accuracy, attraction, and memorability are factors that should be discussed. The discussion should also include the intended target groups of Isotype and the contemporary audiences of news media and professional literature. Is Isotype only for uneducated people?

One probable finding is that most contemporary audiences prefer exact information to the visual explanation offered by Isotype picture tables. Today bar charts, pie charts, and bubble charts, which in principle present *visual* messages, are as a rule supplied with exact figures. Such displays are hybrids. They are half visual display, half table. The visual part lets the reader get a fast idea, while the figures deliver accuracy. In a short period Isotype’s picture tables were also supplied with exact figures. In later displays the figures were abandoned. The big, undisputable advantage of isotype displays is that they are attention grabbing and attractive to look at. The visual attraction may be accompanied by good memorability.

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P S

Design and contexts 1925-1971 is well crafted with a pleasing design. However, there are two minor flaws. First, the key to source abbreviations is located on page 18, while readers expect to find it in the beginning of the book where it would be easy to retrieve for later reference. Second, tiny, alphanumeric caption designations of up to four characters are written with lowercase numerals (6 and 8 with ascenders and 3, 4, 5, 7, and 9 with descenders), which are difficult to read, especially when presented in the very small type used for marginalia.

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