OTTO NEURATH, ISOTYPE PICTURE LANGUAGE AND ITS REFLECTIONS ON RECENT DESIGN

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ABSTRACT

Sign systems, consist of symbols and pictograms, has a great role in rapidly developing recent technological systems, complicating city life, mutually understanding of people from different cultures and languages. Signs, symbols and pictograms, which are having functions like informing, directing and forming a vernacular, have the aim of providing an universal communication that can be understand by all people despite the language, culture and religion differences.

Otto Neurath's ISOTYPE picture language, which is trying to form "a wordless global language", is an important milestone while considering much rapid and effective communication need and the process about developing an easy and universal visual communication system without any needs of words. The aim of this graphic language, which is formed with simple pictograms, is to communicate easily without any needs of knowing any language with removing the borders between cultures and languages. Simple pictograms system, used by Otto Neurath in ISOTYPE, is pioneering the modern data visulization and information graphics as presenting the complicated statistical data in simple graphic forms. Pictograms and data visualizations, prepared by Otto Neurath in social, political, economical, healthcare and education topics are the first ones in this field and also directing more than effecting the pictograms, data visualizations and information graphics in recent visual communication design scope.

Keywords: Otto Neurath, ISOTYPE,pictogram,data visualization,visual communication.

INTRODUCTION

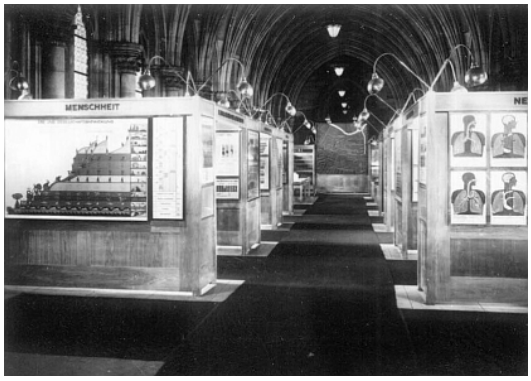
Sign systems consisting of symbols and pictograms play great role for mutual understanding of people from different cultures and languages given the rapidly growing technological systems and sophistaced urban life. Signs, symbols and pictograms with functions like providing information and guidance and creating a visual language have a purpose of providing a universal communication that can be understood by all people despite differences of language, culture and religion.

Taking into consideration the need to establish faster and more effective communication and the process of developing an easy and universal visual communication system without words, Otto Neurath's Isotype language is a significant milestone for creating a 'world language without words'. Sociologist and Vienna Circle Philosopher Otto Neurath (1882-1945) designed pictograms to train especially working groups in the post period of the 1st World War where the pictograms are created by simplifying symbols. This new graphic language is the most important work of The Museum of Society and Economy (Gesellschafts-und Wirtschaftsmuseum) established in 1925 by Otto Neurath in order to transfer social, political and economic events to masses and to increase public awareness. The work was known as "Vienna Method of Pictorial Statistics" and later called as 'ISOTYPE - International System of Typographic Education' and its objective is to transfer social and scientific events in graphics for easy understanding. Isotype "is a method for assembling, configuring and disseminating statistical information through pictorial means" (Walker, 2012, p. 345).

THE MUSEUM OF SOCIETY AND ECONOMY AND VIENNA METHOD OF PICTORIAL STATISTICS

The Museum of Society and Economy was funded by the Social Democratic Municipality of Vienna (a separate state known as Red Vienna) and shared its socialist agenda. Otto Neurath was both the founder and director of the museum and he transformed the museum from a storage place of rare works to a role of educating and training the society. "The aim of the museum "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)" (Burke, 2009, p. 1). The exhibitions in the museum consisted of pictorial charts

created by the 'Vienna Method of Pictorial Statistics' method describing political, social and economic events (Picture 1).
Creation and development of 'Vienna Method of Pictorial Statistics' took place under the roof of The Museum of Society and Economy that had a mission to enlighten the social and economic situation of Vienna after 1st World War and to increase awareness. Various publications by the museum in addition to public exhibitions were effective in the development of Vienna Method. Vienna Method's goal to create a visual language to be understood by people from all education levels is obvious in Die Bunte Welt (The Colourful World), the first book designed by the museum in 1929. In addition, the charts in the book created by the Vienna Method are remarkable with respect to use of colours (Picture 2).



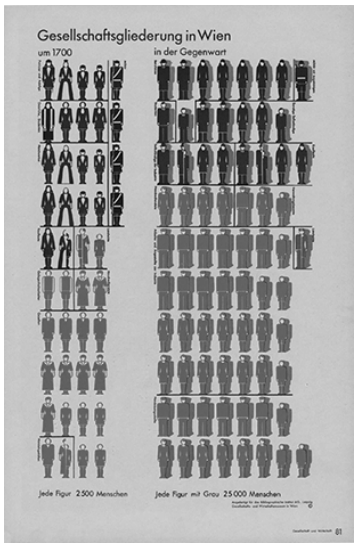
Picture 1. Exhibition for Public Health Care, Gesellschafts-und Wirtschaftsmuseum, New Town Hall, Vienna, 1928.

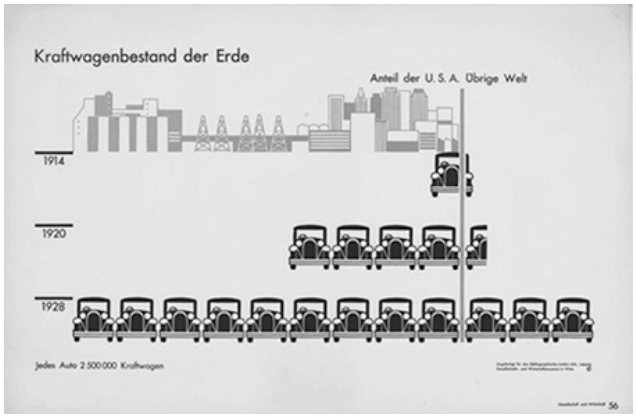


Picture 2. Cover of Die Bunte Welt, 1929.

ATLAS OF SOCIETY AND ECONOMY (GESELLSCHAFT UND WIRTSCHAFT) AND THE PROCESS OF STANDARDIZATION OF THE METHOD

One of the most significant works of the Museum and Society and Economy directed by Otto Neurath is the atlas project called 'Society and Economy' (Picture 3). The idea of atlas came from the Bibliographisches Institute Leipzig, which is one of the most important publishing houses requesting a special prestige book that can be presented to the international market on its centenary anniversary. The atlas consisted of 100 pictorial charts and 30 text tables and it is the most comprehensive and precise work that is prepared in accordance with Vienna Method of Pictorial Statistics. This atlas accepts that the design language of the method is standardized "By analyzing sketches, notes, and other sources, it is clear that the makers of the 'Society and Economy' attempted to standardize not only the atlas's symbols, but its entire design, including its colours, maps, format, and typography" (Ihara, 2007, p. 1).

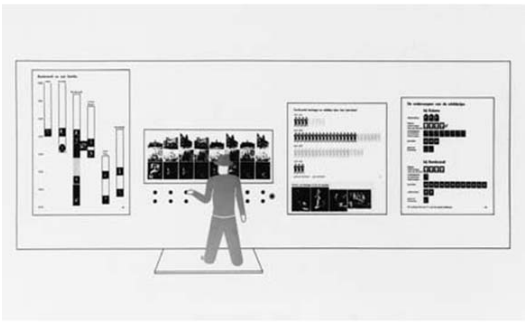




Picture 3. Pages from the statistical Atlas on 'Society and Economy', 1930.

Atlas consisted of independent sheet within a file that can be used for different purposes in different combinations when needed. It was possible to add new pages made of new data and to make various revisions. Atlas, just like the Method, is an open work for revisions and updated. Following the print of atlas, Method's popularity exceeded Vienna and spread worldwide. Atlas turned to be a milestone for the Vienna Method. "At the same time, as a visual encyclopaedia reflecting Neurath's ideas, it can be called an important media that was to become the cornerstone for Neurath's future activities" (Ihara, 2007, p. 15).

Vienna Method settled on standards during the design process of Atlas changed its name to 'ISOTYPE-International System of Typographic Picture Education' and grew after Neurath left Vienna in 1934 due to political status. Neurath migrated from Vienna to The Hague and established 'The International Foundation for Visual Education'. "This foundation was dedicated to the development of his international pictorial language ISOTYPE. Using this 'language', Neurath organized exhibitions in department stores in which were presented visual statistics on economic and societal issues as well as on cultural subjects, such as the work of the Dutch painter Rembrandt (Rondom Rembrandt, 1938)" (Heuvel, 2008, p. 136). Rondom Rembrandt was the first Isotype exhibition about art. This exhibition was innovative in many aspects and dealt with Rembrandt's works in historical and social context instead of original works (Picture 4, 5).



Picture 4. Chart and diagram by International Foundation for Visual Education for exhibition at De Bijenkorf department stores,1938.



Picture 5. A time chart places Rembrandt in context with his contemporaries and historical events, 1938.

TEAM OF ISOTYPE

Isotype is a very strong team work. The team consists of the 'transformer (transformator)' Marie Reidemeister (later Marie Neurath) (1898-1986) and the graphic artist Gerd Arntz (1902-1988). Michael Twymanise states that the team of Otto Neurath, leader and originator of Isotype consist of four main groups. "First, there were the economists historians, and statisticians who collected all the data; second, the 'transformers' who were responsible for organising the information in visual terms so that it could be understood easily; third, the graphic artists who drew the symbols and other artwork and made final decisions relating to the placing of elements on a chart; fourth, the technical assistants who did such things as paste down symbols, spray flat areas of colour, print, take photographs, make models, colour lantern slides" (Twyman,1975, p. 11).

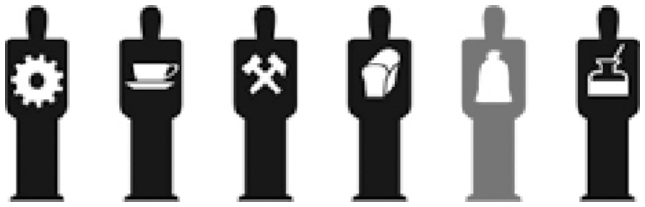
Fundamental to Isotype was the work of the 'transformer'. This role frequently involved creating meaningful visual configurations from numerical data into sketches of pictorial statistics. Transformer was supposed to be able to present data as simple as lay people can understand and produce clear, complete and correct content of multifaceted data and information. "No rules of translation between the verbal and iconic were univocal. The relation between the quantitative, verbal, and expert information, and the final visual representation was described as a transformation, and the expert in charge of carrying out this task was called a transformer (transformator), Marie Reidemeister, later Marie Neurath, trained in mathematics and art was a chief transformer (Neurath 1933/1973, 222, Neurath, M. 1974, 136, and Kinross 1990, 42)" (Cat, 2011).

Gerd Arntz has also important contributions to Isotype work as a graphics artist. Arntz created the symbols used in Isotype by the linocut method and tried to make the symbols in one dimension, simple and abstract as far as it is possible (Picture 6). This way, images gained a more objective expression away from style. Arntz worked at the Museum of Society and Economy since 1928 and designed 4000 different pictograms and visual signs for Isotype. Arntz had great contribution in the design of these visual signs as simple as they can be understood by illiterate people and in basing this visual language on

standards with care. For example, ‘man’ pictogram has many variations by small additions according to content and context. Thus, it was possible to create a visual integrity in the visual created (Picture 7).



Picture 6. Linoleum-cut and print of an Isotype symbol by Gerd Arntz, 1930.



Picture 7. The generic symbol for ‘man’ acquires a specific content.

ISOTYPE PICTURE LANGUAGE

The most important feature of Isotype is to ensure easy communication without the need of any language by removing borders between cultures and languages. Social and economic events were visualized to be understood by people of all ages and even by groups of lower education. Otto Neurath, described Isotype “as a 'language-like technique' characterised by consistency in the use of graphic elements. The basic elements are pictograms - simplified pictures of people or things, designed to function as repeatable units” (Isotype Revisited, 2011).

Signs in Isotype consisted of real form transformed to graphic forms after being simplified after purified from details. In this stage of transformation, qualities like simplicity, easy comprehensibility and fast communication were very important. Isotype developed by trials and tests over the years and gained a certain standard. For example, drawings were always with single dimension and didn’t use perspective. Models or isometric drawings were used when 3 dimensional drawings are needed. Another standard application in Isotype was the way of expression of greater quantities. Greater quantities were expressed by repetition of same pictogram or sign in the same dimension instead of using in greater dimension. All these served to the purpose of establishing fast and effective communication and directly conveying the message. Neurath also cared to ensure that this visual language had an international quality. “Otto Neurath's statement that 'pictures make connection, words make division' was primarily meant to underline the importance of picture language in an international context” (Twyman, 1975, p. 9).

The fact that Isotype was based on certain standards also brought consistency in designs. Even if the content changed, viewers faced pictograms and charts drawn with the same design approach in each work which enabled them to understand this visual language and simplified easier and faster decoding. “Some people may feel that conventions of the kind adopted by the Isotype Movement limit freedom of expression unnecessarily; but consistency in approach is as desirable in picture language as it is in any communication system. Consistency helps the user to understand the meaning of a message because it allows him to get used to the way in which information is structured; it speeds up the assimilation of information; it enables comparisons to be made between work produced in different places and at different times; and it leads to an overall approach to the structuring of information which makes it possible to deduce meaning through context and treatment in much the same way that meaning is frequently deduced in verbal language” (Twyman, 1975, p. 11).

Neurath’s Isotype system presents complex data in a simplified manner while it is also important to pay attention to remain loyal to the real quantities and content of data and information. As the target audience of Isotype is lay people, design priorities were different than statisticians. But the design team also paid attention to ensure that data is provided correctly without deviation for the sake of effective and memorable visuality.

Neurath wanted pictograms to be timeless designs with international comprehensibility. “… 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)” (Burke, 2009, p. 3). Isotype was subjected to various revisions and updates throughout the years. This is an indication that its adaptation to changes, transformations and innovations has great structure rather than its deficiency.

Neurath fled to the Hague from Vienna in 1934 and again had to flee from the Hague with his wife Marie due to the same political matters. Otto and Marie Neurath moved to Oxford and established the Isotype Institute to continue their works. After Otto Neurath's death in 1945, Marie Neurath continued to work at Isotype Institute with her own team until 1960s. ". . . under her direction, between 1947 and the late 1960s, the Isotype Institute produced many books for children in series, including 'Visual history of mankind', 'Wonders of the modern world', 'Visual science', 'The wonder world of nature' and 'They lived like this'. The books show Marie Neurath's remarkable contributions: her ability to identify unusual relationships between things and ideas, and to analyze and then synthesize complex information into bite-sized chunks" (Kindel & Walker, 2011).

ISOTYPE'S EFFECTS ON PRESENT DESIGN

Isotype system is regarded as an innovative work where social needs are solved by graphic design. "A number of important developments in graphic design have stemmed from changes in society or attempts to change it, and have been associated with efforts to unify political or religious communities. Others have been associated with war and the need for efficient communication in battle indeed, some of the most remarkable innovations in pictorial communication have been in maps, plans and charts designed for use in connection with war. But the Isotype Movement provides the best example I know of graphic design innovations stemming from the need for social reconstruction" (Twyman, 1975, p. 7). Therefore, it is a fact that Isotype has an effect in the visual communication design for social content situations today.

The simple pictograms system used by Otto Neurath in Isotype was a pioneer of the modern data visualization and information graphics by presenting complex statistical data in simple graphic forms. The pictograms and data visualisation prepared by Otto Neurath and his collaborators in the fields of social, political, economical, health and education matters are the first examples in this field and affect the pictogram, data visualization and information graphics under the scope of visual communication design of today.

Isotype is one of the significant milestones in the visual communication design due to significant effects on the design of information. Bruke (2009, p.3) refers to various sources and defines the task of transformer in the team of Isotype as a prototype of modern information designers. The majority of the graphic communication methods developed by Isotype and standards for visual communication are accepted among the basic principles of visual communication design. Isotype is effective as a leading visual language system in pictograms, charts and various signs faced in many environments from airports directing many people from different nations, languages and cultures to international, from newspapers and magazines to websites, from social media and to television.

After Isotype, pictograms reached larger audience in the 1964 Tokyo Olympics. The pictogram set designed for 1964 Tokyo Olympic Games ensured that the features of pictograms guiding and informing many people of different language and culture are understood better. The use of pictogram in international events gained speed after this date.

CONCLUSION

"From its beginnings in Vienna of the 1920s, Isotype spread to the Netherlands, Britain, the Soviet Union, the United States and elsewhere. Its potential for communicating with people of all ages and nationalities was explored in a wide range of projects and publications through the 1960s" (isotyperevisited. org, 2011). It would be useful to emphasize the significance of the Isotype Revisited project carried out by University of Reading Department of Typography & Graphic Communication with regard to understanding the importance of Isotype in visual communication. Marie Neurath delivered the archive of Isotype Institute in 1971 to the University of Reading Department of Typography & Graphic Communication. This was called as Otto & Marie Neurath Isotype Collection and the University used this archive to carry out many important research, publication and exhibitions like the 'Graphic Communication Through Isotype' exhibition in 1975. 'Isotype Revisited' has been a three-and-a-half year research project (1 October 2007 to 31 March 2011) was funded by a major grant from the Arts and Humanities Research Council, UK, and drew on the Otto and Marie Neurath Isotype Collection housed in the Department.

Symbols used to ensure communication over centuries gained a standard with Isotype and turned to be the developed pictogram systems of today. It is crucial for people from different cultures to understand each other, to establish faster and more effective communication with regard to having an easier life and providing a universal communication. This is a great requirement for present people under the rapidly growing technological conditions of today.

Isotype work has great effects on the design of information which is an important subject of our age. From another point of view, social and economic subjects dealt with in Isotype by Neurath and his team are also remarkable from the point of view of present designers to social responsibility. The interdisciplinary team work logic of Isotype is also the same with present approaches. "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" (Burke, 2009, p. 3). It would be pertinent to regard Neurath's Isotype project as a study that started significant developments and changes in visual communication.

REFERENCES

Burke, C. (2009). Isotype: Representing Social Facts Pictorially. *Information Design Journal, 17* (3), 210-21.

Cat, J. (2011). *"Visual Education" Supplement to Otto Neurath. In E. N. Zalta (Ed.), The Stanford Encyclopedia of Philosophy.* Retrieved from http://plato.stanford.edu/archives/win2011/entries/neurath/visual-education.html

Ihara, H. (2007). Otto Neurath's Atlas Society and Economy: Design, Contents, and Context. *Proceedings of IASDR2007.* Retrieved from http://jairo.nii.ac.jp/0001/00016948/en

Isotype Revisited. (2011). Isotype: International Picture Language Exhibition, Gallery Guide,Victoria & Albert Museum, London. Retrieved from http://isotyperevisited.org/2012/08/isotype-international-picture-language.html

Kindel, E. & Walker, S. (2011). Isotype Revisited. In C. Burke, M. Eve & E. Minns (Eds.), *Progetto grafico international,19,* 16-23. Retrieved from http://isotyperevisited.org/2010/09/isotype-revisited.html

Neurath, M. & Kinross, R. (2009). *The transformer: Principles of Making Isotype Charts.* London: Hyphen Press.

Neurath, O. (1930). *Gesellschaft und Wirtschaft. Bildstatistisches Elementarwerk.* Leipzig: Bibliographisches Institut. Retrieved from http://libcom.org/library/atlas-gesellschaft-und-wirtschaft

Nikolow, S. (2006). Society and Economy An Atlas in Otto Neurath's Pictorial Statistics from 1930. Retrieved from Universite Paris Ouest Nanterre La Defense, http://economix.fr/pdf/journees/hpe/2006-06-16_Nikolow.pdf

Tufte, E. R. (2001). *The Visual Display of Quantitative Information.* Cheshire, CT: Graphics Press.

Twyman, M. (1975). *The significance of Isotype.* Retrieved from http://isotyperevisited.org/1975/01/the-significance-of-isotype.html

van den Heuvel, C. (2008). Building Society, Constructing Knowledge, Weaving The Web: Otlet's Visualizations of a Global Information Society And His Concept of a Universal Civilization. In W. B. Rayward (Ed.), *European Modernism and the Information Society* (pp. 127-153). London: Ashgate Publishers.

Walker, S. (2012). Explaining History To Children: Otto And Marie Neurath's Work On The Visual History Of Mankind. *Journal of Design History, 25* (4), 345-362. Retrieved from http://jdh.oxfordjournals.org/content/25/4/345.full?keytype=ref&ijkey=7xIdEtKckzoulZB#xref-fn-33-1