

## **“Society and Economy”.**

### **An Atlas in Otto Neurath’s Pictorial Statistics from 1930.<sup>1</sup>**

Dr Sybilla Nikolow

Institute for Science and Technology Studies, University of Bielefeld, Germany

*Society and Economy* is a collection of a 100 pictorial charts and 30 text tables.<sup>2</sup> The atlas was the first large publication of the Museum of Society and Economy in Vienna, the institution which Otto Neurath (1882-1945) founded and directed in Interwar Red Vienna.<sup>3</sup> For and within the museum, he developed his method of pictorial statistics. The method served Neurath as a vehicle for making the empiricist philosophy of the Vienna Circle<sup>4</sup> wider acceptable by the public. It did so in becoming a prescription for how to communicate knowledge by remaining in a field of factual arguing. The visual material represented in Neurath’s pictorial statistics conveyed factual statements, that were based on statistical observations of the social economic order. The detailed study of the atlas will give us insights not only in Neurath’s wider ideas on the role a visual language plays in the humanisation of knowledge in the further world community, but also on his idea on how sociology and economy should be rebuilt according to the empiristic and physicalistic program of the Scientific World Conception in the name of the Vienna Circle. The charts, symbols and tables of the popular atlas I use as a source to examine Neurath’s practice rather than illustrating his philosophical ideas. The study of his work for a visual language within concrete projects like the production and publication of the atlas will provide us with further insights into his philosophical and political program within the historical context of its development.

In the atlas, the scope on the theme “Society and Economy” was widely interpreted. Different styles of representation were used to display and compare social, political

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<sup>1</sup> The Powerpoint Presentation at Paris will include the pictures.

<sup>2</sup> Gesellschaft und Wirtschaft. Bildstatistisches Elementarwerk. Das Gesellschafts- und Wirtschaftsmuseum in Wien zeigt in 100 farbigen Bildtafeln Produktionsformen, Gesellschaftsordnungen, Kulturstufen, Lebenshaltungen. Leipzig: Bibliographisches Institut 1930.

<sup>3</sup> For an early collection of memories and publications in English see: Otto Neurath. *Empiricism and Sociology*. Ed. by Marie Neurath and Robert S. Cohen. Dordrecht 1973.

<sup>4</sup> For Neurath’s impact of the Scientific World Conception of the Vienna Circle see Thomas Uebel (Ed.): *Rediscovering the Forgotten Vienna Circle*. Austrian Studies on Otto Neurath and the Vienna Circle. For the social history of the Vienna Circle see Friedrich Stadler: *The Vienna Circle. Studies in the Origins, Development, and Influence of Logical Empiricism*. Vienna 2001..

and cultural aspects of different regions of the world. Being more than a conventional atlas, the collection of charts was at the same time an encyclopaedia of social economic facts and a reference book of descriptive statistics. It follows three traditions to represent knowledge of the territory: 1) it is a historical-statistical representation of the states and their populations, 2) it is a part of the thematic mapping tradition and 3) it represents an encyclopaedic order of social and economic knowledge. As the subtitle suggests, *Society and Economy* is a pictorial encyclopaedia, i.e. a basic reference work in which knowledge is presented and communicated by means of a visual language.<sup>5</sup>

Apart from a detailed analysis of the different types of pictorial statistics, the paper addresses the various ways of arranging and presenting knowledge (e.g. word and picture, numbers and maps of quantities, museum and lexicon, encyclopaedia and cartography). This is necessary to define the place of Otto Neurath in the wider context of other projects, to facilitate the communication of knowledge and facts. For Neurath himself, it can be shown how close his work on pictorial statistics is connected with his economical, sociological and philosophical oeuvre.

### **The Vienna Method of Pictorial Statistics<sup>6</sup> and the Viennese Museum of Society and Economy (1925-1934)**

In his pictorial statistics Neurath dissociates himself from other popular and scientific styles to represent statistical data. In order to construct an accurate and accessible image of quantitative data, he invented a new method to visualise quantities. The basis of the method is that a greater number of objects is always represented by a greater number of pictorial figures, and the figure for the objects remains always the same. He uses more symbols for more objects, instead of bigger symbols for greater quantities, as it was traditionally done. He adopts so called "speaking signs", rather than abstract, conventional signs. The signs were graphical reductions from realistic

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<sup>5</sup> For a detailed contextualisation of the atlas see: Sybilla Nikolow: Kurven, Diagramme, Zahlen- und Mengenbilder. Die Wiener Methode der Bildstatistik als statistische Bildform. In: Bildwelten des Wissens 3 (2005), No. 1, 20-33, 59.

<sup>6</sup> For a detailed analysis of the method see: Sybilla Nikolow: Gestaltete Bilder und visuelle Argumente. Die "Völker der Erde" in Otto Neuraths Bildstatistik und "Isotype", in: Frank Stahnisch und Heijko Bauer (Ed.): Bild und Gestalt. Wie formen Medienpraktiken das Wissen in Medizin und Humanwissenschaft? Münster 2006, in print.

figures. They should not, he stated, tell the viewer more than one wanted to express.<sup>7</sup> They should direct the attention of the observer immediately to the message Neurath wanted to tell him or her.

For Neurath, the conventional furniture of statistical representation, geometrical objects like curves, rectangles or circles, belong strictly to the world of exact science. He believed that the use of curves in visualising statistics did not make sense for many kinds of social data because “the social reality does not know continuous crossings”.<sup>8</sup> The lay audience mistake the curves very often as a sign for accuracy and scientism, which was not given in the original data.

Neurath's pictorial statistics occupies an important place in the history of visualising statistical data which goes back to the second half of the eighteenth century and the early thematic mapping tradition.<sup>9</sup> The development and the success of his method is deeply embedded in the social and economic reform program of the city of Vienna. In administrating the housing movement in the early 1920ies, Neurath already organised exhibitions to promote their reforms. In 1925 he created the *Museum of Society and Economy* which was funded by the Austro-Marxist municipality of Vienna and proceeded to develop the Vienna Methode of Pictorial Statistics. However, the museum was rather a workshop with separate exhibition rooms in the foyer of the New City Hall. Until Neurath's exile in 1934 he produced numerous exhibitions, illustrated newspapers, gave lectures, published educational material of all sorts and did experiments within several primary schools.<sup>10</sup> The atlas was commissioned by the *Leipziger Bibliographisches Institut*, an important publisher of reference works and dictionaries. In the atlas one can study how Neurath and his collaborators used the chance to generalise the method. In this sense the method became standardized already in the 1929/1930, when the atlas was produced. Shortly after his escape from

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<sup>7</sup> “Nichts ist gefährlicher als ein Zeichen, das manchen Besuchern mehr sagt, als man in Wirklichkeit ausdrücken wollte.“ Otto Neurath: Schwarzweißgraphik. In: Österreichische Gemeindezeitung 3 (1926), 338.

<sup>8</sup> Otto Neurath: Statistische Hieroglyphen. In: Österreichische Gemeindezeitung 3 (1926), 328-334.

<sup>9</sup> For thematic Mapping see Arthur H. Robinson: Thematic Mapping in the History of Cartography. Chicago 1982; for an early German example: Sybilla Nikolow: A.F. W. Crome's Measurement of the “Strength of the State”. Statistical Representations in Central Europe around 1800. In: Judy L. Klein and Mary S. Morgan (Ed.): The Age of Economic Measurement. Durham/London 2001, 23-56.

<sup>10</sup> For an overview see Friedrich Stadler (Ed.): Arbeiterbildung in der Zwischenkriegszeit. Wien: Löcker Verlag 1982.

Vienna the method was renamed and even further developed into the so called *International System of Typographic Picture Education (short Isotype)*, hoping to become the universal picture language for the future world communication.<sup>11</sup>

With the atlas Neurath became much recognition for his method. One of the standard reference works of the time, *Mayer's Lexicon* in the edition of 1930, mentioned him not only in the entry on "statistical representation", but devoted an additional entry to the "Vienna Method of Pictorial Statistics" which included a statistical map from the atlas.<sup>12</sup> Today, the atlas is almost forgotten among academic circles. Only recently graphic designers rediscovered it as source of inspiration and have been updated some charts for the purpose of criticising globalisation politics.<sup>13</sup> As Neurath's visual language is only very recently rediscovered in connection to his concept of social economic order and facts<sup>14</sup>, his pictorial statistics have not yet regained their place in the wider history of visualising knowledge.<sup>15</sup>

Neurath mentioned a number of sources for developing his method: hieroglyphs from ancient Egypt, the representation of soldiers in battle images since the eighteenth century, Comenius' *Orbis Pictus* and picture encyclopaedias in the enlightenment era.<sup>16</sup> In fact, Neurath was looking for a general method that allowed him to visualise social economic facts. The social sciences, for Neurath, were of insufficient scientific standing, because too many metaphysical assumptions interfered with too few empirical observations.<sup>17</sup> On the one hand Neurath developed his pictorial statistics to

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<sup>11</sup> International Picture Language. The First Rules of Isotype. London: Keagan Paul 1936; Basic by Isotype. London: Keagan Paul 1937.

<sup>12</sup> Meyers Konversationslexikon, 7th ed., volume 12, Leipzig 1930, p.1378-9., vol.11, Leipzig 1929, p. 794.

<sup>13</sup> Christoph Behnke, Diethelm Stoller, Anna Schlosser and Ulf Wuggenig (Ed.): *Altas. Spaces in Subjunctive*. Lüneburg 2004.

<sup>14</sup> See Robert J. Leonard: "Seeing is Beliving": Otto Neurath, Graphic Art and Social Order, in: Neil de Marchi and Cranfurt D.W. Goodwin (Ed.): *Economic Engagement with Art*. Durham, London: Duke University Press. 1999, 452-478; Elisabeth Nemeth: *Gesellschaftliche Tatbestände sichtbar machen. Otto Neurath über den Gegenstand der Wirtschaftswissenschaften und seine Visualisierung*. In: Ewa Czerwinska-Schupp (Hg.): *Philosophie an der Schwelle zum 21. Jahrhundert*. Frankfurt a. M.: 2003, 181-208.

<sup>15</sup> He is sometimes mentioned in the history of graphical communication, see Angela Jansen and Wolfgang Scharfe: *Handbuch der Infographic. Visuelle Information in Publizistik, Werbung und Öffentlichkeitsarbeit*. Berlin 1999.

<sup>16</sup> Otto Neurath. *Bildpädagogische Schriften*. Ed. by Rudolf Haller and Robin Kinross. Wien 1991.

<sup>17</sup> Otto Neurath: *Zur Theorie der Sozialwissenschaften*, In: *Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft im deutschen Reich*, 34 (1910), 37-67; (Rudolf Carnap, Hans Hahn and Otto Neurath): *Wissenschaftliche Weltauffassung. Wiener Kreis*, Wien 1929 (=Rainer Hegselmann (Ed.):

communicate social economic facts to a wider audience: an eminently political aim of political education. On the other hand, the method he understood as a measuring stick to formulate criteria for social knowledge, in line with the views formulated by the Vienna Circle.<sup>18</sup>

His most important collaborators at the museum were the „transformator“ Marie Reidemeister (1898-1986)<sup>19</sup> and the graphic designer Gerd Arntz. (1902-1988)<sup>20</sup>. Transformation, for Neurath, refers to the work of visualizing the numerical data into sketches of pictorial statistics. Arntz' input into Neurath's method was important in many respect. He replaced the method of silhouette in paper by the use of the linocut technique. This was a major challenge for the production process in the museum. From now exhibitions and publications were manufactured in the workshops of the museum. The museum was no longer only an archive for statistical data, but also a data bank of images, in which signs and illustrations were collected, improved, extended and re-used. Secondly, due to Arntz's input, the "speaking signs" lost their earlier naturalistic character and depth. They became flat, less individual and more abstract. They became elements of a visual dictionary.

The museum soon grew beyond the exhibition halls and became more and more active as a publishing venture. In 1928 the Austrian Trade Union commissioned a work on the "Trade Unions" (*Die Gewerkschaften*)<sup>21</sup> and in 1929 the Vienna School Reform Movement ordered "The colourful world" (*Die bunte Welt*)<sup>22</sup>. Some of the tables produced for these publications and shown at the same time as part of the

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Wissenschaftliche Weltauffassung, Sozialismus und Logischer Empirismus. Frankfurt a. M.: Suhrkamp 1979, 98).

<sup>18</sup> Galison sees in Neurath's pictorial statistics the transparent constructions which the philosophers of the Vienna Circle and the architects from the *Bauhaus* wanted to achieve. He refers to Neurath's and Carnap's lectures in Dessau to make the connection between both modernist movements. Peter Galison: *Aufbau/Bauhaus. Logical Positivism and Architectural Modernism*. In: *Critical Inquiry* 16 (1990), No. 4, 709-752.

<sup>19</sup> For the work of transformation see her memories from 1986: *Lehrling und Geselle von Otto Neurath in Wiener Methode und Isotype*, typewritten manuscript, Nachlaß Otto und Marie Neurath, Österreichische Nationalbibliothek Wien and Otto Neurath: *Bildstatistik nach Wiener Methode in der Schule*. Wien 1933. For her biography see: Ferdinand Mertens: *Marie Reidemeister, geb. Reidemeister. „Das Miez mit nur guten Regungen“*. „Selbständiger Mensch“ oder „bloßes Neurath-Echo“?, unpublished manuscript 2002.

<sup>20</sup> See for his graphic work: Gerd Arntz: *Kritische Grafiek en Beeldstatistik 1976*. Haags Gemeentemuseum; *Politische Konstruktivisten. Die „Gruppe progressiver Künstler“* Köln. Berlin 1975.

<sup>21</sup> *Die Gewerkschaften. Bildstatistik des Gesellschafts- und Wirtschaftsmuseum*. Wien 1928.

<sup>22</sup> *Die Bunte Welt. Mengenbilder für die Jugend. Veröffentlichung des Gesellschafts- und Wirtschaftsmuseums*, Wien 1928.

permanent exhibition became later standardized in the atlas. The initiative of the atlas came from the publisher, who wanted something special, for its 100th anniversary, something that could be distributed on the international market.<sup>23</sup> The atlas was for the museum a challenging project. Neurath took the project as start to standardize the method. Finally the atlas became the only complete realized encyclopaedia in pictorial statistics. The follow up project with Otlet to publish an atlas on world civilizations failed.<sup>24</sup> Furthermore Neurath's idea to complement the International Encyclopedia of Unified Science with picture volumes like Diderot's Encyclopaedia 200 years earlier was also never realised.<sup>25</sup> With the publication of the atlas the Vienna Method became well-known outside the German speaking world, even before Neurath emigrated and started his international career.

### **The atlas. An elementary work in pictorial statistics**

The atlas is a loose leaf collection of charts that appeared unbound in a folder. On the cover only the words "Society and Economy" appear, without author or publisher, like other atlases. The first sheet subtitles: "Elementary work of pictorial statistics. The Museum of Society and Economy in Vienna shows in 100 coloured pictorial charts manners of production, social structures, stages of civilisations and ways of living". Like in the name of the museum, Neurath understand the title *Society and Economy* as an umbrella to include all possible empirical facts of the world.

The collection of charts starts - according to the tradition of statistical records - with the representation of populations related to nations. In the traditional manner of historical recording the charts are also organised in a chronological order: The atlas starts with the imperial states of the old world (Roman, Arabic, Mongolian, Indian Empires and Old America), followed by the powers of today (the British Empire,

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<sup>23</sup> According to Heinz Sarkowski: Das Bibliographische Institut. Verlagsgeschichte und Bibliographie 1826-1976. Mannheim 1976, the publisher looked in these years for „new ways to reality“. From projects like atlases, he expected to publish comprehensive and relevant facts on the intellectual, economical and political situation.

<sup>24</sup> Neurath mentioned the project in the atlas see Gesellschaft and Wirtschaft 1930, plate 101. For his collaboration with the pacifist bibliographer Paul Otlet see Nader Vossoughian: Facts and Artefacts. Otto Neurath and the Social Science of Socialization. Ph.D. Dissertation Columbia University 2004, ch. 4.

<sup>25</sup> For the work on the encyclopedia see George Reisch: Terminology on Action. Neurath and the International Encyclopedia of Unified Science. In: Elisabeth Nemeth and Friedrich Stadler (Ed.): Encyclopedia and Utopia. The Life and Work of Otto Neurath (1882-1945). Dordrecht 1996, 79-86.

France, the Soviet Union and the USA). This first section closes with maps which represent political states and populations at certain historical time. This is preceded by a representation of the distribution of population at the time of Christ, in 1500 (plate 17) and in 1930 (plate 22). The 1930 map was the plate which the *Meyers Lexicon*, used to illustrate the entry of the *Vienna Method of Pictorial Statistics*.

Contrary to previous conventions, borders are clearly marked and the population is coloured. The pictorial figure used to designate human populations is fundamentally new and sets the direction of the whole enterprise. Neurath previously used different shapes and versions of the human figures, so in the maps on powers and races 1927/8.<sup>26</sup> In the atlas we find Arntz' standardized figure for men. This figure was also used to compose the group of men. Neurath stuck with this sign of man throughout the rest of his work.

The meaning of the various colours of the man is not given in the legend to the single chart but transpires only in the explanatory charts at the end of the collection. He has coloured these nations, he explains, which in the English language were signified as coloured people. In building groups of nations he avoids the classification of the world population by races, as he has done earlier. These groups were not signified by physiognomic differences, because Neurath bases his distinctions not on biological or anthropological inheritance, but on what he calls "the social problems of the present." Brown is used for the Orient and India, yellow of China and also parts of India, black is used for "Negroes and Mulatten" and red for the American Indians.

What does Neurath mean by "social problems of the present"? It seems no coincidence that the earlier maps on races and powers Neurath published and discussed in the context of colonial politics and world economy. There he pursued a project that he named the colonial political enlightenment of the workers from the continent, who had no direct experience with the economic consequences of colonial politics.<sup>27</sup> In anticipating the current separation of the international community of workers Neurath proposes to unite the conflicting parties by basing their political

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<sup>26</sup> Otto Neurath: Bildstatistik. Leipzig 1927; Otto Neurath: Kolonialpolitische Aufklärung durch Bildstatistik. In: Arbeit und Wirtschaft 6 (1928), 674-680.

<sup>27</sup> Neurath: Kolonialpolitische Aufklärung.

arguments on factual observations rather than ideological ideas. Neurath enlightens the workers by and through facts which were to be based on empirical observations only. Despite all groups of nations Neurath wants to represent on an equal level, he needed cultural stereotypes to differentiate between them. In the atlas he uses headgear as a mixture of social distinction, religious tradition and cultural behaviour to avoid any essentialist claims (plate 96).

Nations and populations are followed by a group of charts devoted to the powers of the world in relation to their military power and their political constitution, in a historical perspective. The size of standing armies, armament before and after the First World War, war losses, for instance (plate 26), parliaments and political constitutions (plate 31) are displayed by the use of pictorial figures substituted by bars. Here the basic signs are cunningly differentiated and developed by the use of further attributes, like election forms for instance.

The next section deals with economy and trade. For every commercial article a spatial and a temporal level is represented. Historical development and geographical distribution are given in a table where the top level represents the furthest past (plate 36). The countries are indicated by their names being spelled out, and their production can be compared. The central orientation allows to recognize immediately for which countries decreases or increases have been noted. A second map for each product shows geographical distribution, place of production, trade routes, which again refer back to the world map (plate 37).

The interplay of spatial and historical data is not new to the Vienna Method: But new is the sheer amount and the uniformity of the signs which express agricultural and industrial products of all kinds (plate 47, plate 48) and even the energy systems. To achieve the unified design iconic pictorial figures have been used, and conventional signs like chemical elements have been almost discarded.

The last third of the work contains two parts: the first covers population in cities, population movements, work and unemployment, social structure, organisation of labour, wages and property, etc. plate 74, for instance, shows population movements from 1920 to 1927, and represents positive and negative values in a complex picture.

The table shows many dimensions at once. Immigration and emigration are set side by side in a manner that immediately clarifies the difference between them for each country. To make the single countries comparable, Neurath introduces an additional value, which shows the departing and arriving populations.

The result is a characteristic profile for each country. In the remaining ten plates Neurath presents in his typical manner the complex relationship between population, economical structures, and religion. The table usually consists of three rows only and are intended as graphical conclusions. As it was done for the population groups (plate 96), the next shows manners of production (plate 97). The table demonstrates that modern production methods are characteristic only for white populations, whereas other populations are dominated by agriculture and trades. The collection finishes with a table displaying the main religions on earth (plate 98) in the same style. The different variables of the population (groups of nations, manners of production, religion) were shown to refer to each other without claiming any correlation in a strict causal sense. These tables represent the social economic order of the world by describing it rather than explaining any cause relationship. The knowledge on society and economy Neurath expresses in quantities determined by spacial and temporal relationships.

## **Conclusion**

The atlas is a statistical work, a collection of charts and a lexicon at the same time. In its subtitle, Neurath calls his publication an elementary work and this choice of title refers to Basedow's elementary work, a children's schoolbook of late Enlightenment, which included a collection of copperplates.<sup>28</sup> In this sense, the atlas was thought to become a reference book and a manual in one. Despite its relative high price it was mainly used as manual at highschools.<sup>29</sup>

The atlas only seems to be a work of exactly 100 pictorial charts. As they were issued unbound in a folder, it was also an open work, single sheets could be taken out for

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<sup>28</sup> For children picture encyclopaedias in German Enlightenment see Anke te Heesen: *The World in a Box. The Story of an Eighteenth-Century Picture Encyclopedia*. Chicago 2002

<sup>29</sup> Helmuth v. Bracken: "Gesellschaft und Wirtschaft". In: *Der Volkslehrer* 13 (1931), No. 7, p. 94.

teaching purposes, they could be re-assembled in a different order and displayed in an exhibition, and more sheets could be added with updated information. It is an open work, just as his method was always open for revisions and just Neurath thought about the encyclopaedia versus the philosophical system.

*The Vienna Method of Pictorial Statistics*, is not only a new method of visualizing empirical knowledge to a lay audience, but also illustrates how Neurath's political, philosophical and educational ideas were intertwined. Instead of taking these as derived from separate fields of work, one might think of the co-production of ideas. In this sense the work with the pictorial statistics illustrates Neurath's search for a language that allows to formulate empirical observations by avoiding metaphysical statements. The atlas shows how this was meant to be possible for social economical facts.