

Otto Neurath and Michael Polanyi: social benefits of graphic art

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Note REGENSTEIN HOLDINGS

This paper describes how two important twentieth century intellectuals – Otto Neurath and Michael Polanyi – used graphic art as a resource for providing laypeople with knowledge of economics. The discussion is heuristic and suggestive rather than being driven by a thesis: discussing each man’s uses of graphic art, we hope to encourage future scholars to compare these in greater detail than has been possible in the limited space available to us in this paper. Our discussion pays particular attention to Neurath’s Isotype symbols and to a diagram in Polanyi’s work of the “stage” on which economic activity proceeds, a diagram he first presented in a lecture of 1936 and which formed the basis of his economic film.

Otto Neurath (1882-1945)

Introduction

William Johnston (1972, 195) claims, “In scope of interests” Otto Neurath (1882-1945) “knew no rival in this [20th] century”, rhetorically wondering “Who else conducted original research in physics, mathematics, logic, economics, sociology, ancient history, political theory, history of German literature, architecture, and graphics?” Had he been better acquainted with it, Johnston might have considered the scope of Polanyi’s *oeuvre* to be comparable with, and perhaps even wider than, that of Neurath.

Neurath studied philosophy, mathematics and physics at the University of Vienna and went on to write a doctoral thesis in economic history at Berlin’s Friedrich Wilhelm University under the supervision of Eduard Meyer and Gustav Schmoller (Leonard 1999, 454, Caldwell 2003, 114, also 8-9, and 104). Through 1905 and

1906 Neurath participated in Eugen von Bohm-Bawerk's seminar at the University of Vienna, along with the likes of Joseph Schumpeter, Ludwig von Mises, and the Austro Marxists Otto Bauer and Rudolf Hilferding. The years 1911-1913 saw Neurath studying economic conditions in Eastern Europe and the Balkans, financially supported by the Carnegie Endowment for International Peace, his observations helping to establish "the discipline of war economics" (Vossoughian 2007, 132).

Neurath served with the Austro-Hungarian army as a rations officer in the Ukraine in World War I, and was then appointed director the German Museum of War Economy at Leipzig in 1918 where his exhibitions included use of information graphics (Cartwright et al., 1996, 20). In charge of the office of central planning in the short lived Bavarian Soviet Republic of 1919, Neurath called for socialization modelled on a war economy. Rationing and other state wartime controls can be used to improve resource allocation and productivity, and he expected scientific management would soon replace money economies based on free exchange (Neurath 1909-1919/1973, 124).¹ A government "office for measurement in kind" is to manage the economy along the lines of a giant corporation with the difference this corporation would produce solely in order to satisfy people's needs, not to show a profit (Neurath 1909-1919, 141). Neurath was envisaging a moneyless "in kind" economy in which calculation of "inputs and outputs of goods" proceeds using "physical terms" (Leonard 1999, 455; also Neurath 1928/1973, 265).

Vienna: Housing Movement and the Social and Economic Museum

Returning to Vienna in 1919, Neurath became involved in "Red Vienna's" public housing movement, with architects Adolf Loos and Josef Frank among his colleagues.² In 1924 Neurath was commissioned to establish a museum - *Gesellschafts-und Wirtschaftsmuseum* (commonly signified by the initials GWM and anglicized as Social and Economic Museum) - in Vienna's New Town Hall.

Recognizing the drawing power of the cinema and the pervasiveness of images in modern culture, Neurath preferred using images to words as part of GWM's mission of breaking down barriers between the educated and people with little formal schooling. "Modern man is conditioned by the cinema and a wealth of illustrations",

gaining knowledge “through his eyes. If one wants to spread social knowledge, one should use means similar to modern advertisements” (Neurath 1973*, 214).

Visualisation is the most effective method of acquiring knowledge, a view that foreshadows Polanyi. Neurath envisaged the modern museum as making information attractive and accessible to people from all walks of life (Lewi n.d., 5).

GWM also became a place of pilgrimage for scholars interested in visual education, its staff developing a vocabulary of over a thousand pictographic symbols.³ These pictographs appeared in charts, maps and books, aside from GWM exhibitions.

The social realist artist Gerd Arntz (1900-1988) took over as Neurath’s principal designer, in charge of the graphic design workshop at GWM. W. Sandberg, Erwin Bernath, Marie Reidemeister, Peter Alma and Josef Frank were among other staff members (Jansen 2009, 231, Leonard 1991, 461, Neurath, M. 1973, 60). Isotypes provided visitors to the Museum with statistical information on social-economic trends (production, unemployment, trade, emigration, life expectancy, etc.) in a form most people could readily assimilate, unlike statistical tables and specialist discussions that lay people often resent “as an imposition” (Neurath 1973*, 222; Leonard 1999, 453).

Bauhaus designers were welcome at GWM and Neurath reciprocated their interest, giving lectures at Bauhaus (Neurath, M. 1973, 60). He shared Gropius’ taste for “streamlined and industrial” architectural design, the primacy of utility and function (Gallison 1990, 715). The Vienna Method of Pictorial Statistics developed at GWM as a “genre... of modern design”, infused with the “machine esthetics” of Bauhaus (Lupton 1986, 55, also Gallison 1990, 715-716). Lupton (1993, 22) notes how Wassily Kandinsky, Paul Klee and others involved in developing the “Foundation Course” of Bauhaus aimed to discover a “universal language of vision” with grounds that are independent of verbal language, cultural convention and historical accident. Neurath shared this aim.

The Vienna Method consists in “simple stylized symbols” graphically representing social statistics of “men, women, cogwheels, vacuum cleaners” and a host of other subjects pertinent to the interests of GWM (Neurath 1973*, 215; also Jansen 2009, 229).⁴ Marie Reidemeister (whom Neurath married in 1941) looked on Neurath as

the inventor of Isotype who very much kept his hand in the Museum's day to day creative design work (Neurath, M. 1973, 60).

The roots of the Vienna Method for Neurath extended to his childhood when he was captivated by an exhibition of Egyptian hieroglyphics, which never lost their fascination for him. "I disliked the fact that they [hieroglyphics] changed into the characters of current writing, only legible to the initiated" (Neurath, M. 1973, 6).⁵

Pictorial charts in exhibitions made statistical information come alive to GWM attendees. The method was renamed Isotype (or ISOTYPE) in 1935, the acronym of International System of Topographic Picture Education. Furniture was specifically designed for museum exhibitions and Josef Frank decided on lighting and how exhibits needed to be arranged. The major publication featuring the Vienna Method was "the 1930 *Society and Economic Atlas*, containing 100 pictorial charts, each depicting an aspect of the present and past of social and economic life, to be displayed in a museum-like setting" (Jansen 2009, 227). *Modern Man in the Making* (1939) displayed "an outline for any country's social and cultural report" (Jansen 2009, 233).

Isotype propaganda and rules

Neurath and his staff used the statistical graphics of Isotype to promote socialist policies as well as convey knowledge. For example, diagrams appearing "In War Seasonal Fluctuations Disappear" (Leonard 1999, 470) show *steady* US quarterly coal production through the war year 1917, contrasting dramatic fluctuations in the industry outside of war years, inferring that planning is orderly and markets chaotic. "Market Regulation by Destruction, Brazil 1927, 1937" illustrates markets' susceptibility to corruption (Leonard 1999, 474).

Materials from the museum appeared in school and museum exhibitions across Austria and internationally, an Isotype Institute in Moscow, for example, providing the *Pravda* and *Izvestia* newspapers with pictorial statistics (Jansen 2009, 232, Neurath 1973*, 222).

Rules were abstracted from design work at the Museum, codifying the Vienna Method in a “grammar of picture language” (Neurath 1973*, 222).

- 1.** The first and fundamental requirement was that symbols be readily intelligible “and easily remembered” (Neurath 1973*, 224, Jansen 2009, 232-233).
- 2.** Familiar signs are preferred to unfamiliar ones but if “familiar signs are not available, new ones are invented” (Jansen 2009, 229).
- 3.** The “sign for a thing remains always the same” (Neurath 1973*, 215).
- 4.** A “greater number of things is always represented by a greater number of signs” (Neurath 1973, 215), not by magnifying a single sign because that would confuse “whether it is the height, width, area or some other dimension that is to be taken into consideration” (Jansen 2009, 229).
- 5.** Simple Isotypes are combinable. For example the Isotype for shoe and that for factory jointly signify “a factory in which shoes are made. By another combination, we can discuss shoes made by machinery and shoes made by hand ... Similarly we can add the symbol for coal to the symbol for worker; and we can make an Isotype for mechanised mining and for pick mining” (Neurath 1937*, 225).
- 6.** Isotype “signs are displayed in horizontal lines in groups of five or ten” (Jansen 2009, 229), making up pictorial sentences.
- 7.** “A pictographic statistic is read like text (from left to right), with a bold title at the top. ... If a trend in time is involved, time is always located on the vertical axis” (Jansen 2009, 229).
- 8.** “Seven colours are used (white, blue, green, yellow, red, brown, and black), and colours retain their familiar meaning if possible: green for farming/agriculture; red for power, industry, warmth”, etc. (Jansen 2009, 229).

Isotype and Neurath’s philosophical work

In 1929 The Ernst Mach Association was renamed The Vienna Circle, and Neurath, his brother in law Hans Hahn, and Rudolf Carnap presented its program in a short statement, “*Wissenschaftliche Weltauffassung: Der Wiener Kreis*” (“The Scientific Conception of the World: The Vienna Circle”).

Supporters of the scientific worldview were called on to use logical analysis to unify science, linking “the achievements of individual investigators in their various fields of science”. Emphasis is placed on “*collective efforts*” since these “can be grasped intersubjectively”, and metaphysics is to be eradicated from science (Neurath et al. 1929/1973, 306, also 305, and Neurath, 1928/1973, 252). Unified science is the system of all “logically compatible laws” of “theoretical and practical” science (Neurath, 1931a/1973, 329). The program of unified science recognizes “no authority other than science” (Neurath 1931a/1973, 325) and philosophy has no assertions of its own with which to work, only those of science.

Neurath (1931a/1973, 353, also 349, 358-360) envisaged Marxist sociology as belonging to “materialist unified science”, Marxist knowledge of social life being expressed in “physicalist language”. We can never “step outside language” (Neider 1973, 47) but physicalist science, as an internationally accessible and unifying “neutral system” of statements describing only physical facts, is unaffected by the divisive “slag of historical languages” (Neurath et al. 1929, 306, also 326). Leonard (1999, 459, cf. Lupton 1986, 55) sees Neurath referring the internationally intelligible “visual language” of Isotype to physicalist sociology, the sociology of unified science. Leonard (1999, 459) further comments on how Isotype and Neurath’s museum exhibitions were bound up with a “new form of life he was” wanting to construct. Consistent with his promotion of the idea of economy in kind, Neurath’s Isotypes make no mention of “money, costs, or value indices of any kind”, referring instead to the material basis of life, including standards of living as measured by the likes of “housing, nutrition, clothing, working hours” (Leonard 1999, 468-469).

Exit Vienna

The assassination of Dolfuss in 1934 and the Austrofascists’ triumph in the February crisis of that year forced Neurath and a number of his museum staff to flee the country. Neurath settled in The Hague where he established a Foundation for the Promotion of Visual Picture Education. That remarkable man of letters C. K. Ogden approached Neurath to help illustrate his work, “Basic English” (“Basic” being the

acronym of “British American Scientific International Commercial”), in which Ogden distilled the English vocabulary to a “core of 850 words” (Jansen 2009, 232). Neurath obliged by providing Ogden with “an illustrated primer” of 250 Isotype pictures (Jansen 2009, 232).

Forced by the German invasion to flee The Netherlands in 1940, Neurath and Marie Reidemeister settled at Oxford. With the support of local designers, they founded the British ISOTYPE Institute, appointing London University’s Susan Stebbing as the first chairperson. The Isotype picture language was expanded to include moving symbols, some of which appeared in Paul Rotha’s documentary movies. Neurath died in 1945.

B. MICHAEL POLANYI (1891-1976)

Introduction

Liberal democracies were in a state of crisis through the 1930s. Governments seemed clueless in getting on top of mass unemployment in the Great Depression and many disillusioned citizens turned to totalitarian ideas for solutions. Neurath along with other Marxists construed the Depression as evidence for capitalism being on the way out, and socialism on the way in. For Michael Polanyi the indications were not that capitalism was about to expire but that new life needed to be breathed into it. From 1928 he made trips to the Soviet Union witnessing its experiment in socialism at first hand, and in Berlin he was active in an economics discussion group. By August 1933 life in Germany had become impossible for Polanyi and he took up a position at Manchester University (Nye 2011, 80).

In February 1936 Polanyi (1936/2013, 8-9; Nye 2011, 158 and n. 58, Scott and Moleski, 2005, 163-165) made some “Notes” for an economic film, a project he had been mulling over for the best part of a decade. He had come to believe such a film (perhaps on its own, otherwise with others) could help Western “civilization ...to survive” and restore “our present civic life” to health. The following year, around the time his essay *Soviet Economics* was published, Polanyi (1936/2014-2015) gave a lecture at Manchester, “Visual Presentation of Social Matters” (Scott-Moleski 2005, 164). “Visual Presentation” included three diagrams, only one of which survives

(Figure 2), being a depiction of the “stage” on which the “industrial marketing system” functions. Polanyi’s (1936/2014-2015, 15, 20, 23; Prosch 1986, 184) generic phrase *industrial marketing system* underlined his view that “necessities” constrain the socialist, planned economy of the Soviet Union no less than they constrain the economy of capitalism.

Polanyi’s diagram of the *stage* (platform) of the industrial marketing system is the point of reference of his 1936 lecture and his 1938 and 1940 films. The general appearance of the diagram reminds one of the circular diagram of the Bauhaus education program drawn by Walter Gropius and the artist-teacher Johannes Itten (1922), the difference being their diagram featured segmented circles around a hub (“Bau”/“building” - the core of the organization’s education program) with the segments representing different forms of practical work undertaken by apprentices in workshops under the supervision of trained craftsmen, whereas there is no central hub in Polanyi’s diagram of the economic stage. Polanyi’s thought was that the depiction of the stage would appear in the film for symbolic representations of people to act out their parts.

Problem and solution

In the context of the mire of Western economies and endemic social strife, Polanyi’s (2014-2015, 16) 1936 lecture described the most urgent task facing “the present generation” as discovery of “symbols embodying relevant economic elements, which combined into a pattern would represent economic life and would express its meaning to us”. *The aspiration approximates to that of Neurath but Polanyi sees the problem differently.*

The social strife and human suffering of recent times Polanyi traced to “a mental derangement” akin to the torment of the dogs in Ivan Pavlov’s experiments. The derangement of the masses Polanyi traced to the economic fallacies of *utilitarians* and misunderstandings of the market system. With people applying their ideals “of justice, freedom and prosperity” to an economy they misunderstood, “the results were ...futile or ruinous” (Polanyi 1937/2015-2016, 19). The utilitarians bore much of the blame for the confusion of the masses because they dogmatically applied the

“price mechanism” to “labor, commodity, and capital markets” (McCants 2015-2016, 31) and made self-seeking the driving force of economic activity. McCants (2015-2016) well writes that “the depths of” the “incomprehensibility [for Polanyi] were such that actual mental disorder on a broad scale was the result, the manifestations of which were communism and fascism, and the simple but deadly ‘truths’ they purported to offer”. The disease had to be treated using the correct symbols that would eliminate “fallacies”, disentangle “paradoxes” and overcome “the moral conflict of self-seeking and social purpose”. For it to be able to function properly, the economy had to be spiritually elevated “to a higher plane” (Polanyi 1936/2014-2015, 16).

According to Polanyi (1936/2014-2015, 16), the extent to which our mental abilities and our entire civilization “depend on symbols” has not been recognized. He distinguished symbols into three kinds - verbal, mathematical and visual - and the question he put is which of these best helps to explain the meaning of economic activity. Words as “symbolic carriers of meaning”, patterned in sentences, help us recognize “our own feelings and the situations immediately facing us ...[while] the use of numerals lends us the powers to organize quantities” which, together with the other instruments “of thought” equip us to “handle complex objects” (Polanyi 1936/2014-2015, 16). Words are the symbols most often used in economics, Polanyi observed, but it is visual symbols rather than verbal that will better help the common man to make sense of economic activity. In fact, economies and other complex invisible objects cannot be satisfactorily described in verbal terms. And few people know how to use mathematical symbols. Visual symbols recommend themselves in the following way. Polanyi asked us to reflect on how greatly maps as visual tools help travellers to plan their journeys and how difficult it would be to plan routes using only verbal descriptions or to plan them by way of numerical-geometrical symbols. Following the map analogy, graphic symbols in a “mainly visual” presentation can greatly clarify “the economic system spread out over the land” (Polanyi 1936/2014-2015, 17). The disconnection is maps are static whereas economies are dynamic processes, catalysed by agents making choices to satisfy their changing needs. To capture this dynamic character of economies the symbols used have to “be in motion”, and this calls for “a diagrammatic motion picture” that would provide “the basis of the new symbolism to be created for the representation

of economic life” (Polanyi 1936/2014-2015, 17, also 21). The film would include diagrams as well as images of populations of people, recalling those medieval maps that include images of towns, scenery and people in a geographical context. Polanyi expected populated images in the economic film would eliminate the need for a running commentary since the figures in the diagram would do the talking, not unlike “the symbolic drama of the Middle Ages or the comics of Walt Disney” (Polanyi 1936/2014-2015, 18).

An economy enables agents to decide how best to use available materials and tools, and in an industrial marketing economy decisions are based on the fluctuating prices of things in markets, agents typically preferring to pay less. “When a man makes a dearer thing out of a cheaper thing he makes money. He makes money in wages if he is employed or in profits if he is an owner. Hence a marketing system is a community of money makers. With the money they get, people buy the things they want for themselves and also pay for raw materials and for labour”. In a perfect market “toilers” choose to work in the best paying jobs and owners of businesses aim to maximize their profits (Polanyi 1936/2014-2015, 19 and 20).

“All this remains hazy so long as you just talk about it” but a big step in the right direction is taken “when you draw a diagram of the process”. In Polanyi’s diagram the “stage” on which economic life is enacted is depicted as a circle and each economic fact on this stage has two aspects. In one aspect, arrows depict men heading off from home to work (labourers, factory workers, business people, shop assistants) (Scott-Moleski, 2005, 164). Reaching the factories at which raw materials are processed into finished goods for shops to sell, clockwise arrows taper and multiply. Counter-clockwise arrows “originate in the ‘Shops’ where the money is paid in by the customers. The counterflow of money becomes weaker ...as it progresses since at each stage some is kept back to pay the profits and wages of those who are employed at that stage” (Polanyi 1936/2014-2015, 19). Shoppers are wanting the best value for their money and it is in response to shoppers’ choices that wholesalers raise prices on their better selling lines and lower prices of goods for which demand is weak. There eventually occurs “a readjustment of prices, wages and profits all over the ‘Field of Work,’ leading to an increased production of the articles for which the toilers have expressed a preference through their shopping

wives, and to a reduced production of other things” (Polanyi 1936/2014-2015, 20). The film Polanyi was envisaging in 1936 would show these different actions and effects.

Polanyi expected his film would disseminate economic knowledge as well as releasing a “new economic consciousness” throughout society, opening the entire domain of economic life to study (Polanyi 1936/2014-2015, 22). Whereas Neurath was a committed *dirigiste*, his programs modelled on “War Communism”, Polanyi believed his film would further the liberal principle of “freedom with complete co-ordination”, such as the scientific research community evinces (an early Polanyi reference to science as a system of self-coordination). Making economic activity intelligible to the public, the film would help strip economic units of their cloak of privacy at the same time as it makes them more independent and cooperative (Polanyi 1936/2014-2015, 23). As its awareness is enhanced, the public will commit fewer fallacies and experience less exasperation. “A community conscious of its economic life will acquiesce to necessities of an industrial marketing system against which it now revolts in vain”. The community will persist in seeking “full enlightenment”, eventually controlling “the structure of economic life” by enforcing the power of publicity which “at present is nowhere”. Enforcement of publicity “will fulfil the promises of liberalism” just as it has contributed to the success of science by harnessing the forces of freedom and cooperation (co-ordination) (Polanyi 1936/2014-2015, 23).

1937 papers

Between giving his 1936 lecture and showing his diagram film in 1938 Polanyi wrote two papers pertinent to our topic, “Suggestions for a New Research Section” and “On Popular Education in Economics” (both completed in 1937). The first of these papers is of particular interest here. Polanyi may have been advocating the “new research section” be established at Manchester University specifically, as Beira believes on the basis of Polanyi (1937, 12) writing “the research outlined here seems to be a task appropriate to a university” but, as another possibility, Polanyi may have been promoting a new approach to economic inquiry that would not be confined to any specific university but be practised in many of them, this interpretation being

suggested by his (1937*, 12) referring in this context to “other places in England and abroad pursuing work on lines similar to those of the Research”.

At least this much is clear: Polanyi’s paper dealing with a “New Research Section” distinguished two kinds of economics research: one designed to increase knowledge of economic life and the other devising ways of presenting knowledge of economics to school children and the general public. In research of the first kind errors and fallacies appearing in newspaper articles and other media would be catalogued as evidence of public confusions. The catalogue of mistakes and fallacies would support the other part of economics research of finding “new methods of presentation” in which flawed knowledge would be replaced with sound “fundamental concepts”.

We are aware of no evidence of Neurath ever citing Polanyi’s work, whereas Polanyi’s (1937*, 12) “Research Section” refers to Neurath in arguing that among the methods of presentation he wanted economists to develop is “pictorial statistics, in particular ...the ‘unit symbol’ method of Neurath”. This method, Polanyi stressed, had been successfully employed by Neurath in his “statistic surveys”, attracting around 30,000 members of the public annually to Vienna’s Economic Museum until the government shut it down in 1934. “Neurath figures” have appeared in Austrian newspapers illustrating “statements on economic” and social activities and they have proven to be of value in school programs (Polanyi 1937*, 12). Neurath resonates in Polanyi’s (1937*, 13) recommendation that “an economic museum” be established. The new economics research program being envisaged by Polanyi would make an inventory of films able to guide the public toward a better understanding of economics. The research program would develop “a diagrammatic film presentation of the market mechanism and the circulation of money” (Polanyi 1937*, 13). Polanyi (1937*, 13, Scott-Moleski, 2005, 163-164) also found a place in the program for constructing mechanical models for clarifying “the market mechanism and monetary circulation” such as he and the American corporate figure James D. Mooney had been tinkering with.

The film of 1938

The first version of Polanyi's economic film screened on 9 March 1938 before members of the Manchester Statistical Society, Polanyi (1938/2012, 13-14) describing the film as a "limited experiment" to help people better understand "the causes of booms and slumps". 2400 feet in length, the film ran for 25 minutes. In its final (1940) version – "the first animated diagrammatic film" according to the British Film Institute - the film showed for 40 minutes (Beira August 2012, 4 ("Introduction" to Polanyi 1938). Later in the year Polanyi presented his film to the twenty-six invitees to philosopher Louis Rougier's (1889-1982) Paris colloquium for the review of Walter Lippmann's book, *The Good Society* (1937). Polanyi's film of 1938 used diagrams in motion ("visual presentations") to explain the "outlines of the economic system" and disturbances of the monetary system of the "economic organism" (Beira August 2012, 3, "Introduction" to Polanyi 1938, quoting *Manchester Guardian* 8 March 1938, also Polanyi 1938, 6). Reviews in the *Manchester Guardian* of March 8 (p. 13) 1938 noted the film mostly comprised symbols ("diagrams in motion"), with some "bald statements" about the circulation of money such as "the money which people spend" returns to them as income (Beira August 2012, 3-4, quoting *Manchester Guardian*, March 8 1938, 13).

The "Money" film of 1938 (and that of 1940) worked out the stage diagram in detail, modifying and elaborating the diagram of 1936. The film comprises symbols diagrammatically representing people, institutions (including money) and objects (such as raw materials, and goods produced). To these are added symbolic representations of flows or "belts" transporting money, goods or people.

The *Manchester Guardian* of 10 March 1938 alluded to the film as including animated figures spending money which (money) eventually returns to workers and managers as income. Further issues – saving, banking, investing money in industry – are introduced along the way, showing how "the contraction of spending by industry reduces income to home and industry until industry's exhausted funds are rebuilt and can again finance industrial spending" (*Manchester Guardian*, p. 16).

The impression one gains of the symbolic figures in the movie is of their being moved rather than moving themselves, lacking self-starting agency and being mute, the *Manchester Guardian* of 31 March 1938 noting that the film shown to the Manchester branch of the Historical Association the night before included "a running commentary by" Polanyi (*Manchester Guardian* articles, p. 18). A March 30 1938

showing juxtaposed Polanyi's with other documentaries: Lewis Namier and Ted Hughes' "Changes in the Franchise since 1932" (these were Manchester colleagues of Polanyi), Granville Poole's "Some Aspects of the British Coal Industry", and Paul Rotha's "The Face of Britain". (Several of Rotha's later films were to incorporate Neurath's Isotype symbols (see M. Neurath, 1973, 72-74).)

Postscript

Neurath and Polanyi undertook projects aimed at improving modern society, assigning graphics an important role. They differed greatly as to the nature of the good society and the way to achieve it.

Neurath as a Marxist called for the economy to be socialised, an economy of "in kind" transactions, without monetary exchange, socially engineered by government and managed by it according to its plan. Polanyi's disposition was liberal-conservative, adverse to Marxism and government planning, affirming the free industrial market economy and analogizing it with freedom as a system of spontaneous co-ordination in science.

In support their respective social-economic ideals, each man turned to visual symbols of graphic art in their projects with the object of making economic activity intelligible to the great majority of members of society who had no economic training. The graphics each man used owed much to the specialist skills of professional design artists. Polanyi used visual symbols in a single project, his economic film explaining some of the workings of the industrial market economy. Neurath used graphic art to form the "vocabulary" of icons of the Isotype visual language. These icons – births, marriage, unemployment, mortality, goods produced, trade, furniture, factories, etc. – were originally conceived to be used in exhibitions at his Social and Economic Museum in Vienna, appearing later in other media products in whose publication Neurath had a hand. Rules were framed to guide the use of Isotype graphic symbols, including their additivity. Polanyi's graphic icons were few in number and part of a single project whereas Neurath's icons were myriad in number, extensive in range and used in various visual media.

The graphic images Reginald Jeffryes made for Polanyi's film seem not to have been taken over by other educators, economists or film makers. There was no legacy of which to speak of images in Polanyi's film. Having been conceived for Polanyi's film they remained interred in it as it were. Neurath's icons on the other hand were embraced and added to by many graphic artists and designers. Neurath's pictographs proved influential, Polanyi's images did not. A synoptic work such as Richard Hollis' (2001) *Graphic Design*, for example, illustrates these facts with several of its pages discussing Neurath and Isotype while there is no mention in the book of Polanyi nor Jeffryes. Johnston (1972, 194) writes "by 1940 isotypes had been widely adopted, and by 1950 they were so popular that few people remember their origin in socialist Vienna. Used today in publishing, advertising, museums, and tourism, this visual alphabet fulfilled" the aim "of helping plain people to understand their environment."

How are we to explain this difference of response and lack of response. In Neurath's pictographic images one finds a brio that Polanyi's images lack. Neurath's icons remain fresh, vivid and sharp to this day, but not so Polanyi's. The sheer number of Isotypes is impressive (Arntz alone designed over 4,000 of them) compared to the paltry number of images in Polanyi's film. Alongside Neurath's images, those of Polanyi, it has to be said, appear vague, nondescript, lacking detail, without distinct outline, and overall rather uninteresting. One gets a sense of this from a sample of commentary accompanying part 2 of Polanyi's 1938 film: "For a more complete account we must greatly simplify our way of picturing the flow of goods and money. We first lump together all the places of production into one area called 'Business Units'. We treat the 'Homes' in a similar fashion, turning them into a plain rectangle. We begin our revised story with a single business unit and a corresponding section of the homes", and so on (Polanyi 1938, in Beira Working paper 127, 2012, italics added). It seems as though the didactic intent of Polanyi's film required the graphics be kept simple. Polanyi's icons are not aesthetically pleasing whereas "the attractiveness and expressiveness of the picture elements are essential aspects of [Neurath's] picture statistics" (Lewi n.d., 4). This may explain why the legendary British producer and chronicler of documentary films, Paul Rotha (1952, 261, also M. Neurath 1946), made use of Isotype images in documentary

films (e.g. “World of Plenty” and “Blood transfusion service”) but not Polanyi’s graphics.

Notes

1. Friedrich Hayek regarded Neurath’s writings on war economy, beginning in 1913, as the spark that lit the fuse of the “socialist calculation debate” between he and Ludwig von Mises, and their supporters (Caldwell 2003, 116).
2. Forced from Austria in the 1930s, Josef, brother of the physicist-philosopher Philipp Frank, migrated to Sweden and became a leader of modern design.
3. “Graphic art” in this discussion means art as *design* as against “*fine art*”.
4. The Vienna Method has been variously described as pictorial statistics, a sign language or a language of pictorial symbols, as a pictography or picture language or a system of visualisation, and as teaching pictures (Neurath 1973*, 215; Lewi n.d., 5; Lupton 1986, 57-58).
5. Other influences on Neurath’s system included the Russian logician, Gregorius Itelson, the 17th century scholar, Johann Amos Comenius (1592-1670), and the American engineer Willard Cope Brinton (1880-1957) (Neurath, M. 1973, 7, Jansen 2009, 227-230).

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