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Marie Neurath and Adprint

1 Isotype and Adprint in exile

The development of the pictorial method of knowledge transfer by Otto and Marie Neurath and their partners during their years in exile only becomes intelligible against the background of contemporary currents and tendencies in culture and science. In the first half of the twentieth century, access to increasingly specialized knowledge had become the condition for participation and advancement in cities from London to Vienna. Intellectuals, journalists, writers, publishers, and scientists were at the time concerned with aspects of mass communication such as reading habits, the public's understanding of science, or the idea of a universal language: from the German Bauhaus movement to Paul Otlet's Mundaneum in Brussels and C. K. Ogden's Basic English (a condensed version of English with a reduced vocabulary of 850 words). In the course of his life, Otto Neurath collaborated with all of them in the form of lectures, educational projects, and publications. He believed that modern science should help to gain a clearer and more coherent view of the world for all people, regardless of social status or age. Especially in the face of emerging dictatorships, the spread of political propaganda, and manipulation by the political establishment or the sensationalist press, critical opinion-forming needed to be supported. This was also the view of a group of left-wing and Jewish emigrants in Great Britain (and the USA) around Wolfgang Foges, Paul Steiner, and his staff at the book-packaging company Adprint, a partner with whom Otto and Marie Neurath closely collaborated. The communication of scientific facts, new findings, and developments in Adprint's illustrated nonfiction books required not only expert knowledge on the part of the authors, but also the ability to convey this didactically. They saw it as their duty to combine a contemporary, modern way of imparting knowledge to a mass audience with emancipative-enlightenment goals and forward-looking design.

Another contemporary example, besides Isotype, are the infographics of the German bestselling author and physician Fritz Kahn. He became known for his multi-volume work *Das Leben des Menschen* (Human Life, 1922–1931). This included illustrations such as "Der Mensch als Industriepalast" (Man as Industrial Palace), which depicts bodily functions in analogy to modern, rationalized, and mechanized work processes or the human body as a machine. In an innovative and often humorous way, Kahn succeeded from the 1920s onward in making complex biological facts and processes comprehensible to the masses in words and images in close semantic connection, especially drawings. Kahn was closely asso-

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ciated with Paul Steiner and published several of his books with him in the USA.[1] In comparison with Kahn, Otto Neurath's approach was more systematic and universal: the development of Isotype (International System of Typographic Picture Education) in exile – as described most notably by Christopher Burke, Eric Kindel and Sue Walker in their standard work on Isotype (2013)[2] – can be seen in analogy to the development of a scientific language – as a symbolic language based on conventions with a high iconic quality, e.g. showing social, technological, biological, or historical connections in pictorial form. Back in Vienna at the Museum of Society and Economy, Otto Neurath, with a team including Marie Reidemeister and graphic designer Gerd Arntz, had invented between 1925 and 1934 the so-called Vienna Method of Pictorial Statistics, on which Isotype is based. They established rules for the systematic transformation of data, first in the context of "Red Vienna" for the workers' movement, laypeople, and for schools, basically for the German-speaking market. In exile, the team developed this further to provide education and information for an international audience. Marie Neurath, who held the role of "principal transformer" at the time, described the work processes in Vienna at the museum and the later development in her book *The Transformer – principles of making Isotype charts,*[3] posthumously published in 2009:

> From the data given in words and figures a way has to be found to extract the essential facts and put them into picture form. It is the responsibility of the 'transformer' to understand the data, to get all necessary information from the expert, to decide what is worth transmitting to the public, how to link it with general knowledge or with information already given in other charts. In this sense, the transformer is the trustee of the public. He has to remember the rules and to keep them, adding new variations where advisable, at the same time avoiding unnecessary deviations which would only confuse. He has to produce a rough of the chart in which many details have been decided: title; arrangement, type, number and colour of symbols; caption, etc. It is a blueprint from which the artist works. (Neurath and Kinross 2009, 78)

For Otto and Marie Neurath and their team, the processes of social transformation were essentially mediated by comprehensive linguistic and visual communication that was intended to address the cognitive and emotional development of people as social beings. This could be accomplished by creating the structures necessary for this transfer of information, by establishing formalized procedures and standards, and by applying multimodal epistemic techniques for describing facts in the world. After Otto Neurath's sudden death on 22 December 1945, Marie

1 For more information on Fritz Kahn and Paul Steiner see: Körber (2016, 57–76) and Körber (2018).

2 See Burke, Kindel, and Walker (2013).

3 See Neurath and Kinross (2009).

Neurath took over the management of the Isotype Institute, which she moved to London in 1948 to be closer to the most important partners with whom she collaborated. From that point on, the schemes of illustration were varied and new trends in the visualization strategy could be observed, for example in the brochures produced by Isotype for West Africa and in the children's books that were published from the 1950s onward. Even before Otto Neurath's death, there had been an exchange of ideas with Wolfgang Foges about the production of books for young readers, but it was not until 1948 that these plans were implemented under the imprint Max Parrish and later partly as Rathbone Books/Aldus.[4] At this point, a brief introduction should be given to Adprint, a likewise innovative but little-known producer of books.

In 1937, the Austrian Wolfgang Foges founded the company Adprint (the name was formed from the words "advertising" and "printing") in London and assembled a group of creative collaborators consisting of diverse talented, well-informed emigres from Germany and Austria and a growing number of local employees as well. Among them were freelance writers (mostly British), designers, photographers, and picture editors (like Ruth Rosenberg),[5] the latter being an emerging profession at the time. Adprint and the newly founded Isotype Institute in Oxford began their close and fruitful collaboration in 1942, which Marie Neurath continued even long after 1945. Adprint founder Foges initially produced magazines with the support of Lord Glenconner (Tennant & Son); this was an occupation he had already pursued in Vienna. Only a little later did he concentrate solely on nonfiction books, which from about 1939 he published with other German-speaking emigrants such as Eva Feuchtwang (later Neurath) and Walter Neurath (no relation to Otto Neurath). The two were to found the publishing house Thames & Hudson in London in 1949. The US branch of the company, called Chanticleer Press, was represented by Foges' childhood friend Paul Steiner from

4 In 1948, Foges left Adprint as the company was losing money and the financiers no longer had confidence in him. Max Parrish, who had previously worked at the Ministry of Information (MOI) and as an editor at Adprint, took over the company in 1948, but Foges returned to Adprint in 1952, after Lord Glenconner sold his shares to Wilfried Harvey of the Purnell and Sons printing company. According to David Lambert, at that time Adprint only produced children's books that were mostly based on television programs or were adaptations of books from the United States. See Lambert (2009, 116) and Holman (2008, 109, fn 155).

5 Ruth Rosenberg from Berlin was an art historian and archaeologist who had previously worked at the German Ullstein Verlag for the precursor of Bilderdienst, then for Adprint and Max Parrish in the field of image research and design, and later became an influential book designer at Thames & Hudson. See Nyburg (2009, 51) and R. Rosenberg, National Life Stories. Book Trade Lives Interviews, interviewed by C. Courtney, 29 February 1992 – 4 April 1992.

Vienna. The novel production model for illustrated nonfiction developed by these emigres is presented in more detail in Section 3.

After the war, the German publisher Willy Droemer in Munich together with the German book agent Felix Guggenheim, who had emigrated to Los Angeles, became one of the closest partners of the book producers and publishers[6] mentioned here. The development of the technically demanding and complex publications that emerged from these collaborations was possible not least on the basis of the enormous advances in the field of printing, the (photographic) reproduction of images and color printing, which made it possible to distribute print products to a mass audience at affordable prices. The knowledge and ability to apply and control the techniques involved had already been acquired by Wolfgang Foges, Paul Steiner, and Walter Neurath[7] in their home country. It was based on the long and rich tradition of German-language publishing and bookselling with which these actors were familiar and with which Otto and Marie Neurath strongly engaged as well.

At the same time, Otto and Marie Neurath remained committed to the core concerns of a "scientific worldview" in line with the philosophy of the Vienna Circle set out in the manifesto *Wissenschaftliche Weltauffassung* (Scientific Worldview, 1928), which had also determined their work in Vienna. The interdisciplinary collective of the Vienna Circle emerged from a discussion group around Otto Neurath, the mathematician Hans Hahn, and the physicist Philipp Frank before World War I. Around 1922, with the call of Moritz Schlick to the chair of natural philosophy, the circle continued its work with an enlarged group of participants and conducted weekly meetings. There was agreement on a materialist program on an interdisciplinary basis in the service of science and society: its foundation was to be modern mathematical logic on the one hand, and empirical data on the other. This publication states, among other things, that the members felt committed to the ideals of the Enlightenment, humanism, and social progress. Following these principles, Neurath advocated working in an interdisciplinary collective,

6 The term refers to book packagers (or producers) who take on the creative and design part of the genesis of books, i.e. they design them on behalf of publishers or as their own development for them and produce them up to the pre-press stage or also commission the printing, see Ridler (1976, 9); Westphal (1991, 198–199), and Fischer (2011, 78).

7 As Paul Steiner described it, Foges had gained some experience in the Moderne Welt publishing house in Vienna as a magazine publisher and benefited from this knowledge about illustration material and reproduction techniques, knowledge that at least at that time most book editors lacked. See Steiner (1913–1941, 422). An exception is Eva Feuchtwang (née Neurath), later cofounder of Thames & Hudson, who worked in an antiquarian bookstore and in art stores in Berlin but only came into contact with the production of books in exile, see Neurath and Feuchtwang (2017).

combined with the claim to intersubjective communication of experiences and the orientation towards empirically founded knowledge. This was linked to the intention of objectifying the transfer of information for a broader audience. The visual presentation of facts and data should therefore focus on a systematic methodology to remove ambiguities in the service of better communication. The targeted selection and preparation of information – from the simple to the complex ("humanization," not simplification)[8] – and the claim to connect theoretical knowledge with the real world, was in the Viennese period still strongly indebted to the popular-education and workers' movement.

The situation during the war, however, and the conditions of exile in The Hague, then in England, affected the scope and focus of Otto and Marie Neurath's work. In addition to adapting to the new cultural-linguistic context parallel to the scientific goals of the Unity of Science movement of the Vienna Circle, the scale and direction of the activities also changed. On the one hand, the orientation shifted towards an Anglo-American culture and even an international market, something which was also reflected thematically. On the other hand, the books reached a much wider circle of readers, which ultimately required a higher degree of standardization, serialization, and expertise. The founding of the Isotype Institute in Oxford in 1942, which was to coordinate the comprehensive activities for the visualization of knowledge for a mass audience, should also be analyzed in this context. Hence, one could speak of two phases or strands of development in exile. On the one hand, there was the emergence of Isotype from 1934 onward, which still took place in The Hague together with the graphic designer Gerd Arntz on the basis of the Viennese method. This international *Hilfssprache* (auxiliary language), as Otto Neurath also called it, was intended to be a universally understandable instrument, at least in terms of its intention of conveying knowledge in the service of a future egalitarian community of nations. Isotype, compared to the previous approach of the Viennese period, aimed to potentially address a wider readership with a greater variety of topics. The convention-based symbols had a high iconic quality and were applied to different media in the context of the established method of transformation. The Isotype symbols, while not intended to completely replace the text, were used where pictorial signs could clarify and enhance a context. The second strand in the development of the visualization of information was the development of a "picture-text style" as implemented in a novel type of book called *Modern Man in the Making*.

8 See Neurath's posthumously published text "Visual Education – Humanisation versus Popularisation" (1945), in Dahms et al. (1996, 245–335).

2 *Modern Man in the Making* and the picture-text style

The decisive step in this direction came with the book *Modern Man in the Making* (1939), published in the USA by prestigious publisher Alfred A. Knopf. As Marie Neurath had suggested, the use of Isotype was to be combined with a coherent "neutral" everyday language. In retrospect, she described it as follows:

> Otto got a contract with Alfred A. Knopf for *Modern Man in the Making*. The new work gave us new joy, and recognition and opportunities came to us from the Netherlands also. [. . .] I remember when Otto and I were walking together one evening along the street to post several letters and we were talking about *Modern Man*. Otto remarked that we had only to put together some of the many things we had done in the past; and for once it was my turn to suggest: why not use this chance to make something different? It was all in our hands. And so the picture-text style idea was born that night. It certainly came more from his brain than from mine, but I did present one real gift to him at that time, the word 'Isotype'. He heard it and liked it, and he asked Arntz the next day to design an Isotype trademark. (Neurath and Cohen 1973, 63–64)

Apparently, the development of the semantically closer picture-text style and the more international scope of Isotype was very much the result of a cooperative decision and process of debate. Even if only Otto Neurath's name appeared on the cover of the book, the contribution of the whole team, especially Marie Reidemeister and Gerd Arntz, is mentioned in the foreword as well as in the acknowledgments of *Modern Man in the Making*. Moreover, the picture-text style was very consciously perceived as a new stage in displaying information on a specific topic. It did not just convey facts and data but also promoted critical-logical thinking on a broad level, for example through comparative analysis: the reader was to be put into a discursive state of mind which, and this is crucial for the development of the picture-text style, also requires the written language – moving back and forth between pictures, maps or diagrams and textual information, comparing facts, data, and visualizations and gradually revealing what is at stake in a specific context. This means that different pieces of information could be linked and provide a practical demonstration of how to think and argue in a clear, more scientific way, as explained in the foreword:

> This comprehensive survey starts with facts. The same facts can be looked at from different points of view. Thus it may be an element in the world situation, [. . .] or an element of daily life. It is important to build bridges from one field of investigation to another and to show cross-connexions. [. . .] Certain arguments appear again and again, but are scattered so that it is not easy to arrive at a comprehensive view. How can facts be presented without

> causing confusion by their overwhelming diversity? The visualization of selected primary material connected with simple statements is one solution. (Neurath 1939, 7)

In Otto Neurath's view it was important not only to present data but to contextualize and connect it, and even more, to show how to do this in an appropriate scientific way. Many contemporary sources of information like newspapers and magazines remained superficial or were written in a lurid style. Or, like scientific and educational publications, they were often clouded by technical terms and jargon and already presupposed a more comprehensive background knowledge on the part of the readers. Hence, Neurath intended to show an alternative: "Therefore this book presents, where possible, material which everybody will find useful in interpreting statistics published in newspapers or reference books" (Neurath 1939, 7).

The overall intention of the book was to analyze "fundamental trends" in the social, political, and economic life of humanity without "presenting any social or economic theory" (7). The topics covered include diverse social issues of the time such as mortality, health, employment, trade, education, mobility, migration, and demographics. All in all, it was intended to support common people in adopting a modern attitude, i.e. a "scientific attitude," in dealing with the increasingly urgent global social problems of mass societies – as the Vienna Circle had also called for since its early days from 1907 on. Especially against the background of the following acute political crises, extreme polarization, and economic and social grievances, such training of cognitive and analytical skills seemed necessary to the strengthening of "common sense".

In formal terms, the book was a close semantic and physical combination of Isotype and a simple, comprehensible text, similar to C. K. Ogden's Basic English,[9] whereby grasping the content was only possible through the cognitive processing of both elements – as it is formulated at the beginning:

> The principle of visualization applied in this book is based on the ISOTYPE method, developed by me together with my collaborators during the last fifteen years. It shows connexions between facts instead of discussing them. Impressive visual aids do not merely act as illustrations or as eye-bait in this book; they are parts of the explanations themselves. The reader may not understand the contents by reading the text only; he must 'read' the pic-

9 The linguist Charles Kay Ogden was the inventor of the international auxiliary language Basic English, which was conceived (and published in 1930) with a vocabulary of 850 words and was intended to promote language reform. By 1935 it had spread to over 30 countries. Ogden was committed to the international peace movement and, in this context, to a closer link between linguistics and philosophy to improve global understanding through the creation of a universally usable language.

> tures as carefully as the text. An international picture language is combined with a world language. (Neurath 1939, 8)

In the book the use of pictures like the typical "Mengen-" or "Führungsbilder," maps, and the special color guide system can be understood as tools to activate a "scientific attitude" on the part of the reader through a comparative analysis of different panels or pictorial statistics in interaction with the text. Thus, following on from Elisabeth Nemeth's approach, it is not a matter of using illustrations to comprehensively present a particular issue (Nemeth 2011, 71). The structure developed by Neurath and his colleagues is too complex and requires an in-depth study of the facts and figures presented. Rather, it is the combination and alternation between different illustrations and parts of the text or levels of communication that should enable reflective access to the content – in the sense of a "visually guided comparative judgement," as Nemeth claims (71).

The overarching goal, however, was already to develop a model for further publications and a modular system in which the arrangement of information could be varied according to the requirements of the topic. In a time of greater media diversity and the technically feasible mass reproduction of images, the close connection of image and text was the key to addressing a wider audience: the serial production of knowledge content according to the principles of the greatest possible consistency, clarity, and objectivity. Avoiding technical terms and a descriptive, clear, and easily accessible language mode play a role here, but also the building up of information from the simple to the complex in order to introduce the recipients to a topic. Marie Neurath described it this way in her report in the publication *Arbeiterbildung in der Zwischenkriegszeit* (Worker Education in the Interwar Period):

> Text and pictures follow each other in a continuous train of thought: we called it picture-text style. I later did a children's book series in this style: "They lived like this." For *Modern Man in the Making*, the work of transformation involved not only the panels themselves but also fitting them into the text; the collaboration of all involved in the production of this book was particularly close and, I believe, successful. (Neurath 1982, 29, translated from German by the author)

The picture-text style formed the basis for the Isotype Institute's further cooperation with Adprint. Here again, processes of the modern mass society, which are based on the division of labor, standardized and also commercialized, played a role because they made knowledge about the world available for many people at affordable prices. In principle, the visualization of information about nature and culture, technology or art for different purposes and target groups has a long history – from ancient wall paintings to manuscripts and illuminated codices, maps, diagrams, and illustrations in atlases and encyclopedias to the mass-distributed

periodicals of the nineteenth and twentieth centuries with color photography. However, the systematic use for argumentative purposes over longer sections in a book was a novelty. The term used for this at Adprint was "integrated layouts" or "integrated books", in which the semantically and physically close connection of text and image on a book page became the principle.[10]

As Marie Neurath has already indicated, the practical and technical implementation of the picture-text style was particularly elaborate and required a certain know-how and infrastructure for a broader implementation. These prerequisites were only fulfilled in exile together with the aforementioned Jewish and leftist publishers and their collaborators. The cooperation between Adprint and the Isotype Institute included the development of various nonfiction series and individual titles for adults, as well as ideas for children's books. These projects were realized after Otto Neurath's death by Marie Neurath and Adprint, mostly for the imprints initiated or managed by Wolfgang Foges. In order to understand this creative and innovative cooperation, it is necessary to describe the new book production model invented by Adprint.[11]

3 Book packaging: Creative design and production

Even before his emigration in 1937, the publisher Wolfgang Foges had been familiar with Otto Neurath's ideas and apparently met him personally for the first time in 1930 or 1932 as a student of national economics in Vienna. Both came from the same intellectual and cultural background in Vienna, such as the circle around sociologist Paul Lazarsfeld and social psychologist Marie Jahoda. Neurath and Foges met again in London in 1941 and a very creative and successful period of collaboration of nonfiction books and magazines for a general audience began, e.g. on science and technology, culture, society and history or biology and medicine. Even if it was at times not without conflict, the collaboration with Isotype was to be of lasting significance and undoubtedly shaped the development of Adprint's publications. This can be observed in the structuring of content, the clear and rather neutral language, and the colorful picture-text style in integrated lay-

10 As Eva Feuchtwang (later Neurath) recalled, "The type of book Adprint produced was unusual at the time: Richly illustrated books with text and pictures integrated, and with illustrations playing a documentary role, were yet largely unknown in England or America" (qtd. in Steiner 1997, 40). See also Facetti (1964, esp. 57), Ridler (1976, esp. 22), and Meredith (1990).

11 For more details see Körber (2016, 2018).

outs. In an interview with Ian Hamilton from *The Guardian*, Foges described Otto Neurath as "the most important influence on his thinking" (Hamilton 1964).

At the time Adprint worked for and on behalf of British publishers and also on behalf of the Ministry of Information as a so-called book packager. As Foges' childhood friend Steiner explained in his unpublished memoir, this involved a novel production model specifically for illustrated nonfiction, based on Foges'

> brilliant idea of setting up a book-publishing house according to the principle of the creation of books, i.e. a publishing house whose sole task was to conceive books and book series, to have the texts written, but not to take care of the distribution. (Steiner 1913–1941, 421–422, translation from German typoscript by the author)

The conception and design of these nonfiction books was not developed within a publishing house, as usually happened, but was taken over by the book-packaging company's in-house editorial team. This team was not only responsible for the text of individual volumes and book series, but also for the illustrations and the integration of text and images. Foges proposed to English publishers such as Collins that they leave the entire time-consuming and cost-intensive production of new books and series to Adprint and that they in turn take on marketing and distribution themselves as usual. The reprints and other distribution rights, for example for international co-productions, would be organized and safeguarded by the book packager, so that both parties had an interest in the lasting success of the works produced.

Gradually, a professional workflow and production processes were established that could meet the high demands for quantity and quality in serial publications. The result of this collaboration with Adprint, the American branch Chanticleer Press, and their clients and partners was not least the development of genre-specific conventions, which corresponded to the stronger contemporary systematization of scientific content. Foges advanced to become the "first major British maker of illustrated educational books for an international market" (Lambert 2009, 113), as David Lambert, former editor at Wolfgang Foges' Rathbone Books, summed up.

After Adprint, Foges founded other book-production companies such as Aldus Books, and imprints including Max Parrish, Rathbone Books, and Buffalo Books. At its peak, Aldus Books employed some seventy people and produced long-lasting and profitable major projects that were distributed internationally and translated into various languages. In this way, he influenced the publishing industry primarily in Europe and the USA, which led to the formation of the above-mentioned business model, and the establishment of book types such as subject-specific picture encyclopedias.

The innovative books developed with their modernist design, initially close to the Bauhaus style, and the sequential double-page structure consciously incorpo-

rated new communication strategies. This included the use of photography instead of drawing, the depiction of everyday life and ordinary people, and the use of a more documentary, observational style. Models for this could also be found in advertising, photography, and film at the time. This included the use of different types of images in the book series, which were not only chosen or produced for their aesthetic value, but rather for their epistemic quality. Different types of text, typographically marked or highlighted, provided the necessary deepening or supplementation. Thus, text–image schemes were developed that visually signaled the cohesion of the individual titles in a series at the very first glance, e.g. a specific color coding for cover and back cover or the use of photo montages for the cover image. The underlying method of systematically making information accessible through a coherent interplay of text and image was vividly described by the book designer Germano Facetti. He described Adprint's integrated books as follows:

> [. . .] the flow of images, captions and diagrams was planned like a documentary film; but unlike a film, the book could be opened at any page to provide leads onward and backward in the text. [. . .] In these books the images and the graphics follow a track where the essence of the text is underlined [. . .] in 'close-ups' enhancing the art works and in 'sequences' integrated in the text. (Facetti 1964, 53, 57)

Nevertheless, from today's perspective, the question of the value of art and art practice in the transfer of knowledge and in science also arises – as an extension of scientific goals and ideas of objectivity or intersubjectivity that is not readily accessible and usable.[12] For this is also about the limits of understanding art, which are not least conditioned by the specific materiality and technical realization. Thus, pictorial symbols, whether Isotypes, diagrams, or photographs, often function in differentiation from and supplementation of textual statements in that they leave empty spaces, deliberately focus on individual statements, or generalize. Not least, however, this creates space for imagination and creative reinterpretation, which makes this form of information transfer particularly connectable as a multifaceted statement. In particular, Elisabeth Nemeth has pointed out that the Isotype symbols were not intended to comprehensively represent a certain fact (2011, 71). The visualizations were far too complex and required a certain

12 Otto Neurath in particular rejected the idea of objectivity as a whole as pseudo-rationalistic, in favor of an intersubjective acceptance of conventions within the framework of a collective understanding of science. For him, knowledge was historically and socially conditioned and subject to constant change, as formulated several times in the famous simile of the ship, e.g. Neurath (1932/33, 206).

amount of practice and willingness to delve into the depicted contexts in order to unfold a productive benefit:

> By contrast the visualisation method which Neurath advocated is based on an approach in which the added precision is achieved in quite a different way, namely by comparing back and forth between two constellations of elements. The contrasted constellations trigger certain activities in the observer: 'considerations' in which she constructs the comparison herself. (Nemeth 2011, 71)

It seems, then, that in the publications that Adprint developed together with the Isotype Institute, it was rather the combination and alternation between different illustrations and levels of (also textual) information that was intended to enable reflective access to the content. It was a process of constant comparison and understanding, as Germano Facetti described it, by turning the pages back and forth in the book.

4 Marie Neurath: Prototypical authorship

Adprint's illustrated nonfiction books required the ability to convey specialized knowledge didactically, and furthermore to develop it closely with the image level. In general, external freelance authors, often well-known British experts and scientists like biologists Julian Huxley or John Boyd Orr, were chosen to produce the book series and individual titles in order to make it easier to launch and sell the books on the English-speaking market. But most of these authors lacked an understanding of the requirements of book design and the importance of visualization in the structuring and creation especially of book series. Instead, the book packager's workflow focused on the creative part of the concept and design – in close coordination with Isotype, who took on a special role as a partner due to their close collaboration over many years. As a consequence, it was not uncommon for the editorial team to heavily rewrite the texts, or to write them themselves from the start, because many scientists or experts could not do so appropriately for the "common reader" or for a younger target group. Even though a final fine-tuning took place with the respective external authors and often with the publisher or board of editors, the important decisions were made in the preceding process of coordinating text and image. This took also place with regard to the general design principles of, for example, a book series. In this respect, it becomes obvious that Marie Neurath was an exception: in addition to her creative tasks as a transformer, she also took on the function of the idea-generating author, which corresponded to Otto Neurath's practice established in Vienna.

Under Marie Neurath's aegis, children's books became an important and successful field of activity for the Isotype Institute, including the "Visual History of Mankind" (1948), a series still developed together with Otto Neurath, or the "Visual Science" series (1950–1952) in six volumes. But, as Burke and Sandner point out, "[. . .] she came into her own with books on scientific subjects, drawing on her previous education. For series such as "Wonders of the Modern World" and "Visual Science", she conceived titles and consulted with leading experts on the content" (2022, 115).

Notwithstanding the difficulties that subsequently arose, especially with Max Parrish who had little understanding of the Isotype Institute's method (Walker 2013, 396), Marie Neurath was able to gain greater freedom for herself as an author and designer of books for children and young people than other authors. This lay precisely in her ability to think and develop a theme in argumentative text–image chains and to maintain the balance between image and text throughout the book – as the prototypical author and designer. For this purpose, she evaluated current informational material in advance that helped to analyze a topic from different perspectives and prepared drafts of the integrated layout with image sketches as well as text sections in order to structure the subject through text and image from the very beginning. In other words, the picture section is not conceived after a text has been created as a decorative element or to break up the content.

A good example from Marie Neurath's production is the children's book *Inside the Atom* (1956) for the Max Parrish imprint. In the USA, the book was published in 1957 at the publishing house Lothrop, Lee & Shepard under the title *Exploring the Atom* with a slightly different cover (Chanticleer Press Edition). Text and image were closely linked and required detailed specialist knowledge of how the content needed to be structured and a possible visualization. As described comprehensively and in detail by Sue Walker (Walker 2013, esp. 420–421), material was gathered for this purpose from various sources, including the archive of the Isotype Institute, but also from periodicals, which helped to analyze it from diverse perspectives. In addition, Marie Neurath sought advice from the emigre Austrian physicist Otto R. Frisch (1904–1979), nephew of famous physicist Lise Meitner, who had been involved in the Manhattan Project (in the main phase 1942–1946) to build the atomic bomb in Los Alamos, USA, before teaching in England at Cambridge University. After such a closely linked process of design and conception, a dummy was usually produced and presented to interested publishers and at trade fairs.

Nevertheless, it is important to note that the potential of this method lies particularly in its flexibility and expandability, on the one hand with regard to the target groups and the variety of topics, and on the other hand in the manner and

style of visualization – and here too Marie Neurath forged her own path. This was particularly evident in the projects she carried out for Wolfgang Foges and his subsidiary Buffalo Books on behalf of the British Colonial Office in West Africa. Here she collaborated with the regional administration and did on-site research in order to be able to better understand and adapt the content and design to the cultural and social conditions, especially since the topics were political, economic, or medical and needed to reach as many adults as possible. As Eric Kindel has pointed out, Marie Neurath, unlike Otto Neurath, was able to test and advance the idea of internationalization through symbols which were supposed to characterize Isotype (2013, 449). In practice, the development and application of Isotype remained limited to the "modernized West" and was oriented towards Western concepts of language and knowledge. Stylistically, the visualizations as a whole remained committed to the visual language of Isotype and used tables, picture symbols, and diagrams, even though the color palette appeared larger and some new features and characteristics were introduced, "balancing general and local depictions":

> General depictions consisted of graphic arrangements showing processes, relationships, and comparisons typical of Isotype. Local depictions include the flora, fauna, equipment, buildings (materials and structures), village and town scenes, and work roles typical for the Western Region, which Marie Neurath observed herself or had brought to her attention by government officials and specialists. With few exceptions, depictions of humans were also localized in their naturalistic features and in their cultural and social identities, conveyed mainly through attire. (Kindel 2013, 460)

Another example that shows the extension of visual language and stylistic adaptability is the series "They Lived Like This" (1964–1971), already mentioned in connection with *Modern Man in the Making*, by Marie Neurath, which was also produced for Max Parrish and for which she collaborated with various illustrators. Here, on the visual level, they broke away from the strict schematization and simplification of the Isotype style and instead chose a finer, narrative style that also resembled the visual language of the culture depicted. It seems that in the children's books, despite the desire to do full justice to the original character of Isotype and the clear, reduced, and static form, Marie Neurath nevertheless successively added new layers. It is a progression that might not have been possible before, since consistency of visualization was a high priority – although changes may have made the books more accessible for children. Thus, Sue Walker quotes an article by the *Times Literary Supplement* from 1964 according to which the books "have softened over the years" and the illustrations "have a more human quality [. . .] less coldly diagrammatic" (2013, 406). Different types of images were used, such as photographs of landscapes, and the combination of text and image was,

according to Marie Neurath, less dense or closely intertwined (2013, 406–407 fn 26). However, with a wider range of image types from different sources, it is more difficult to achieve a coherent visual style and argumentative image–text coordination. Here, the approach of visually guided comparative judgment as was constitutive of the earlier Isotype books might give way to a mixed form in which the aesthetic quality of the images also varies, and the text is complemented rather than allowing independent understanding or access to the information.

5 Conclusion

As Burke and Sandner have pointed out, Marie Neurath was a "key figure" in the "work of visual education from the beginning" (2022, 103). It was her merit as author and designer to have decisively influenced the further development of these (children's) books. All the more so as these books on current scientific topics were time-consuming in their research and preparation and were also technically complex in the integration of images and text. The nonfiction publications for various target groups that emerged this way eventually found their way into other book markets: through international co-productions Foges, Steiner and also Thames & Hudson were able to realize high-quality produced books with an increasing proportion of color prints for a large readership, even if adjustments had to be made over time to changing standards and reading habits. An example for a rather fluid transition of target groups of such publications is Wolfgang Foges' successful *Wonderful World* series (16 vols., 1954–1961), from 65 to 96 pages with about 250 color illustrations in the format 32.5 x 24.5 cm for 21 shillings per volume. The text had a more sober and factual style that reflected the change in the type of illustration and at the same time sought scientific legitimacy so as not to be perceived as a mere picturebook. Isotype diagrams, photos, drawings, and comic-like sequences were used as well as relief maps from Foges' subsidiary Geographical Projects. The series, attracting authors such as Lancelot Hogben, Benjamin Britten, Julian Huxley, James Fisher, Richie Calder, Lord Boyd Orr, and J. B. Priestley, whose qualifications and reputation were highlighted in the blurb and short biographies, covered topics ranging from mathematics to archaeology, medicine, nutrition, energy, evolution, theatre, and music in a colorful design. The books appealed to young people as its core target group, but were also received by adults. Bertrand Russell, for example, said of the most successful volume *Man Must Measure* (1955) by the British scientist Lancelot Hogben that it was a "masterpiece of

simplification without falsification" (Lambert 2009, 118, 120).[13] David Lambert, author and former editor at Wolfgang Foges' Adprint, Rathbone Books, and Aldus described it in the following way:

> The books' big, colourful jackets; distinctive pictures [. . .] headings in a modern sanserif typeface – all these stood out from a dull sea of academic publishers' small-format textbooks sparsely illustrated with foggy grey photographs. Schools bought the series for their libraries [. . .]. (2009, 120)

However, it turned out that reading habits and the more flexible allocation of the target group could also prove to be challenging. The German publisher Droemer Knaur, which acquired the license for the German-speaking market, had problems selling these volumes on the rather conservative German book market, precisely because the books dared to break new ground in terms of language, content, and visuals. Willy Droemer, who had realized various projects with the book packagers and publishers, nevertheless was one of those who welcomed and supported this development in equal measure. He outlined this in the publishing program for the autumn of 1961, naming as references Brehm's *Thierleben* or also Comenius' *Orbis pictus*, to which Otto Neurath had also referred more than once:

> An era of the visual had dawned. And this newness demanded a new type of book. The "illustrated" book of the past was no longer sufficient; a new, closer connection between colorful picture and word had to be created, a new type of "picture book" that was at the same time a "nonfiction" book. Publications of this kind, however, could only be created through international cooperation. [. . .] And the framework of cooperation with the publishing elite of the Western world was constantly expanding. (Droemer 1961, 4, translated by the author)

Here, the Munich publisher describes the successive internationalization of the publishing market after 1945, as a result of which the aforementioned concepts and publications found their way all over the world but also back to Germany, where licenses were once again traded at the Frankfurt Book Fair from 1949 onward. In this context, the book concept and design evolved towards the greatest possible international compatibility of texts and illustrations. Overall, the idea of the "integrated book" or the picture-text style in the service of "humanizing" and visualizing information proved to be a successful concept. Such books facilitated access to complex topics and offered orientation in an increasingly demanding world of work and life. The encyclopedic idea, which was also the basis of Otto Neurath's scientific work, can be seen here on the one hand in the serial processing of interconnected complexes of topics within book series. Marie Neurath developed these for children and Wolfgang Foges later in single-volume picture en-

13 B. Russell, without source reference (qtd. in Lambert 2009, 124, column 1).

cyclopedias on thematic complexes. The combination of a standardized visual language and a factual, everyday language was able to fill a gap in the transfer of knowledge for the common reader in the form of affordable publications for different target groups – a task that Marie Neurath considered her central concern as a "principal transformer" and whose methodology she decisively shaped after 1945.

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