



Marie Reidemeister and Otto Neurath: interwoven lives and work¹

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Abstract

Otto Neurath and Marie Reidemeister were both part of an interdisciplinary team which developed the 'Vienna Method of Pictorial Statistics' (later known as Isotype). Neurath is usually credited as the 'inventor' of Isotype, yet Reidemeister was a key figure in this work of visual education from the beginning. After Neurath's death in 1945, she continued the Isotype work for two and a half decades. Marie Reidemeister also became a historian of Isotype and, in the 1970s and 1980s, she was involved in editing publications about Otto Neurath, helping to shape and correct the record of his life and work. This paper explores the challenges faced by female surviving partners who have worked intensively with their spouses for a long time and later work on their legacy. What problems arise from the effort to honour the deceased partner for one's own visibility as a researcher? Marie Reidemeister's role and attitude deserve examination for not fully conforming to the stereotype of a widow anxious to control the reputation of a deceased partner; neither did she attempt to present herself as the 'great woman behind a great man', instead calmly recording facts that establish her as a pioneer of information design.

Keywords: Isotype, visual education, collaborative couples, crossgender collaboration

Introduction

The ‘Vienna Method of Pictorial Statistics’ was developed from 1925 onwards by a group at the Social and Economic Museum of Vienna, directed by Otto Neurath. There it was used mainly for adult education – to make social and economic relationships understandable to the citizens of Vienna – but also in schools. In addition to pictorial charts based on statistical data, educational pictures were also produced for health campaigns or accident prevention at work. The Vienna method quickly achieved international fame. In addition to exhibitions, Neurath’s team designed numerous publications, and even some animated films. Almost from the beginning, Marie Reidemeister was responsible for the designing work of ‘transformation’ within the team at the Museum. At the end of the 1920s, the German artist Gerd Arntz joined the staff and created the design of the increasingly standardized pictograms. The charts, which were mostly based on scientific data, were always produced in ‘collective work’:² a number of scientists and artists were involved, i.e. experts in statistics, history, medicine, geography, cartography, engineering, industrial management, and history of art.³

Following the events of February 1934—the suppression of the workers’ movement and the establishment of a dictatorial, Austrofascist political system—many protagonists of the visual education work had to flee from the threat of persecution. Based on a proposal by Marie Reidemeister, the acronym Isotype (International System of Typographic Picture Education) was introduced as the new name for the method soon afterwards. The aim of Isotype was the ‘humanisation’ and the ‘democratisation’ of knowledge, as Otto Neurath in particular repeatedly emphasised.⁴

The role of Marie Neurath (née Reidemeister) has been persistently underestimated in the history of Isotype. She was an essential member of the team led by Otto Neurath at the Social and Economic Museum in Vienna and she continued this work for decades after Neurath’s death in 1945. It was, however, not only the writing of its history by others that was responsible for this; her own historical accounts of it after 1945 partly contributed to this false impression, along with Neurath’s own writings (however inadvertently). Yet there is at least one example of her complaining about this tendency, and in her final memoir of the professional partnership with Otto Neurath (published in 2009), her own significant contribution came clearly to the fore. As a sign of the increasing recognition of her individual work as a writer and designer, an exhibition was dedicated to her in 2019.⁵

Yet Reidemeister also played a leading role in the first consolidated appreciation of

Otto Neurath's work by co-editing the volume of his writings *Empiricism and Sociology* (1973). Interest in the work of Otto Neurath continues to grow as his views on manifold subjects – political economy, linguistic philosophy, and visual education – seem to resonate increasingly into the twenty-first century. A 'political biography' of Neurath was published in 2014, and a full version of his 'visual autobiography' appeared in 2010.⁶

Using the example of the life and work relationship of Marie Reidemeister and Otto Neurath, this essay will examine how surviving partners who worked intensively together with their spouses for a long time participate in their legacy. What challenges does this kind of remembrance work face? What problems result from the effort to honour a deceased partner – also for a woman's own visibility as a researcher? It is shown that Marie Reidemeister's role as Otto Neurath's working partner and leading transformer of the Isotype team resulted in challenges and problems for her later historical work and memoir writing. It concerned not only the story of her life partner and work colleague but also their joint project, for which she felt particularly responsible after her husband's passing.

By addressing such research questions, the essay also aims to contribute to the discussion about collaborative couples and crossgender collaboration.

Crossgender Collaboration

The story of Marie Reidemeister and Otto Neurath is also interesting against the background of the role and position of women in education and science at the beginning of the twentieth century. Slack points out that the 'interwar period in general (...) emerges as a historical period conducive to the rise of crossgender collaboration in the arena of social policy.'⁷ For Neurath, however, such collaboration was anything but new. For him, women played a much greater role as cooperation partners and collaborators than, for example, with the other members of the Vienna Circle. The Vienna Circle was a philosophical discussion group in interwar Vienna and Otto Neurath was one of its leading members; his second wife, mathematician Olga Hahn, was also a member. None of its other (mostly male) members did joint scientific work with their spouse. Why was Neurath different? At least two things can be mentioned here: Firstly, the key role of 'women's issues' [*Frauenfrage*] in Otto Neurath's early intellectual and political socialisation. In this context, both his early correspondence with Swedish reform pedagogue Ellen Key as a young man and his partnership and later marriage with Anna Schapire, who had vehemently and belligerently advocated women's rights, played a role. Secondly, and in line with this,

Marie Reidemeister was not the exception as a (female) cooperation partner, but rather the rule. For Otto Neurath practiced not only egalitarian collaboration with his first two wives: in general, women played a central role in the ‘collective work’ with Otto Neurath—exemplified by Margarete Lihotzky in the Austrian Settlers’ movement, or Marie Jahoda and Edith Matzalik in the Social and Economic Museum—to name but a few examples. Mary Fledderus, Mary van Kleeck or Susan Stebbing could be mentioned as further (later) examples in the time of emigration (1934–1945).

Neurath’s position on the fringes of the academic field may also have played a role—in other words, his relative distance from university life. This became increasingly clear at the latest after the University of Heidelberg revoked his habilitation in May 1919, a consequence of his involvement in the revolutionary events in Munich after the Great War. The path Neurath then took offered little security via an institution, but enabled a largely self-determined organisation of work, which would certainly have been more difficult in a hierarchical and extremely male-dominated institution such as the university.

Anna Schapire and Olga Hahn

Otto Neurath was married three times, and in each case the marriage was not only a personal but also a working relationship. He had been widowed twice before he married Marie Reidemeister in 1941. Jordi Cat has described this as ‘a lifelong pattern of serial integration of intellectual and erotic bonds’,⁸ which carries the mild implication of a compulsion on Neurath’s part. Intellectual exchange and professional collaboration were certainly part of the partnerships with his first two wives. This was by no means unique,⁹ but nevertheless the exception.

Anna Schapire, who was Neurath’s senior by more than five years, made a decisive contribution to his intellectual development, influencing his main interests and contributing to his politicization.¹⁰ Born in Brody in 1877, Schapire was politically active as a young woman. In 1906, she earned her doctorate from the University of Bern with a dissertation about the protection of workers’ rights in Germany. Her work was multifaceted: she was a prose writer and poet, a translator and political journalist, a literary scholar, and a feminist publicist. She married Otto Neurath in 1907, and together they compiled a two-volume reader of economics in 1910. This was intended to familiarize students with original economic texts, each prefaced by short biographical sections about the authors. In the same year, their translation of Francis Galton’s *Hereditary Genius* (1869) was also published under the title *Genie und Vererbung* (Genius and heredity). In the jointly written preface, they explicitly

endorsed Galton's views on the inheritance of talent and intelligence. Anna Schapire-Neurath died in November, 1911, at the age of only 34, due to complications after the birth of her only child, Paul Neurath.

Less than six months after the death of his first wife, Otto Neurath married his schoolmate Olga Hahn (born in the same year as him, 1882).¹¹ This seems to have been a marriage of friendship and mutual assistance. Olga Hahn had gone blind at the age of 22 and became increasingly isolated as a consequence. Neurath had been studying in Berlin at that time and, on returning to Vienna in 1906, he joined others in helping Hahn to complete her studies in mathematics and philosophy. They organized a reading service and mathematical exercises to prepare her for examinations. In 1911, she became only the third woman to earn a doctorate in philosophy from the University of Vienna. Neurath evidently hoped to count on Hahn's contribution to educating his son Paul, but it must have become clear that this was too burdensome to her and, one year after their marriage, the young boy was sent to be cared for at an institute of evangelical deaconesses in Upper Austria, only returning home when he was nine years old. Otto Neurath wrote essays for publication with Olga Hahn: as early as 1909, the two had jointly published the article 'Zum Dualismus der Logik' (On the dualism of logic). In the 1920s, she participated in the meetings of the Vienna Circle, and before that in other discussion groups together with her husband. One of Neurath's closest friends, Wolfgang Schumann, wrote later:

Anna, a few years older than he, somewhat more civilized and highly intelligent, reacted with criticism and irony to many of his more daring statements and thus contributed to his maturing. He seemed to know and appreciate this. ... [Olga] was as intelligent as Anna, also had a streak of irony, but on the whole was more amiable and tolerant. ... Many people in Vienna reproached Neurath for his quick remarriage. Both Otto and Anna had been close friends to Olga for years.

This was part of recollections written at the request of Marie Reidemeister-Neurath¹² after Neurath's death, and eventually included in *Empiricism and Sociology* (1973; see below). Yet the last sentence here seems to have arisen only in the late stages of editing that book, perhaps written by Reidemeister herself (as Wolfgang Schumann had died in 1964); it replaced Schumann's original observation that Neurath 'justified his action quite naturally. He had loved Olga already earlier. He shared with her his pain over Anna.' Reidemeister felt compelled to add a note (signed with her initials 'M.N.') to this passage: 'Nobody knows better than I how loyal Otto was to each of his wives; conflict or competition between these loyalties was non-existent.'¹³

Marie Reidemeister and Otto Neurath—biographical sketches up to 1925

While Otto Neurath's life is well documented biographically, Marie Reidemeister's is not and, especially for her early life, we have to rely mainly on her own autobiographical notes and memoirs, which remain largely unpublished. In particular, her typescript text 'An was ich mich erinnere' (What I remember), which she wrote at the suggestion of Henk Mulder in 1980, is an essential source. As a memoir written by somebody aged 83—unedited and not intended for publication—it must be approached with caution, yet it displays remarkable recall and precision.¹⁴

Reidemeister was born in Braunschweig on 27 May 1898. She came from an educated, middle-class family, and graduated from secondary school in 1917. She then studied natural sciences, first at Braunschweig Technical High School, but mainly at the universities of Munich, Berlin and Göttingen. It had only been possible for women to register at these institutions since 1909, and no doubt Reidemeister was one of few female students at that time.

Otto Neurath was born almost 16 years earlier, on December 10, 1882, in Vienna. He began his studies there, but then studied mainly in Berlin, earning his doctorate on the economic history of antiquity. This was followed by his military service, several years as a teacher at the Neue Wiener Handelsakademie, and his service as an officer in World War I.

The paths of their lives crossed for the first time in the immediate post-war period in Munich, although there was no personal encounter between them yet. Reidemeister experienced the Bavarian Revolution as a young student at Munich university, where she not only heard lectures on atomic theory and on art history (by Heinrich Wölfflin) but also by revolutionaries Erich Mühsam and Ernst Toller. She did not hear Otto Neurath, who gave a lecture in January 1919 to the Munich Workers' Council on 'Full socialization', having become an important theorist on this matter after working as director of the Museum of War Economy in Leipzig (1917–18). Neurath was appointed president of the Bavarian Central Economic Office at the end of March 1919, to implement his program of full socialization, but after the counterrevolution in May 1919, he was arrested and sentenced to imprisonment for 'aiding and abetting high treason'. He remained free on bail and was deported to Vienna after more than half a year of negotiations between the Austrian and Bavarian governments, on the condition that he would not return to Germany.

Reidemeister recalled that 'north-Germans' were not allowed to return to study in Munich after the counter-revolution, so she went instead to Göttingen University,

where her brother, the mathematician Kurt Reidemeister, was also studying. There she came into contact with the sect-like group around philosopher Leonard Nelson, in which educational reformer Minna Specht played a key role.¹⁵ An intermediate semester was inserted in 1919 (due to the war), and she took the opportunity to study drawing and calligraphy in Braunschweig. She moved to Berlin in the early 1920s, where she was given the opportunity to teach in a home for schoolgirls alongside her studies. She was not at all comfortable with the permissive mores of the big city, yet she enjoyed visits to her grandmother's brother Wilhelm Bode, influential art historian & director of Berlin museums; and she heard lectures on theoretical physics by Max Planck, 'which certainly made the greatest impression on me'.¹⁶

Back in Vienna, now under enlightened social-democratic rule, Neurath first worked in a research institute for social economy, and then became a leading figure in the settlers' movement, supporting self-build associations and promoting garden housing-estate projects. This work brought him into contact with architects such as Josef Frank, Adolf Loos, and Margarete Lihotzky. Based on the final exhibition of Austrian Settlers' Association in 1923, Neurath founded the Museum für Siedlung und Städtebau (Museum for Settlement and Town-planning).

At Easter 1924, Reidemeister returned to Göttingen University, where she had been inspired by lectures on aesthetics by educationalist Herman Nohl. He persuaded her to travel with a group to Vienna to learn about the school reform there. Her brother Kurt had already been brought to the University of Vienna by Hans Hahn in 1922, and consequently came into contact with the Vienna Circle already mentioned, a philosophical group of which Neurath was a founder member. In September 1924, the Nohl group traveled to Vienna. Kurt suggested to Marie Reidemeister that she meet 'the Neuraths', meaning both Otto and Olga Hahn-Neurath. Reidemeister and Neurath formed a close connection from the start, and Neurath included her in his plans for a new Gesellschafts- und Wirtschaftsmuseum (Social and Economic Museum), which opened in January 1925.

Reidemeister went back briefly to take the state examination at Göttingen University, which was then a leading centre for the study of physics under Max Born. At her viva voce, Born questioned her on electromagnetics and thermodynamics; Paul Bernays was her assessor. She took up her position at the Social and Economic Museum of Vienna on 1 March 1925.

'Thinking, feeling and action'

It is worth quoting at length from Reidemeister's account of her first meeting and

rapid involvement with Otto Neurath, which reflects the enmeshed personal and professional bonds between them. Almost six decades later, she recalled the precise date of the encounter (in which she was accompanied by fellow student, Konrad Hirsch)—Friday 26 September 1924:

A red-bearded giant in a white shirt with brown stripes opened the door, looked kindly at me and said: 'so this is Mieke'; he took me by the hand and led me, past book-cases, into the room where the blind Olga was. ... I was also astonished when I looked at Olga; Kurt had described her to me as sharp and cynical, with a man's intellect; I saw her friendly, intelligent, serious face and felt a great warmth. Kurt had said little about Otto himself; so I was not really expecting that I would be completely won over and overwhelmed, from first impressions. I can report hardly anything of the conversation; I know only that I listened to everything that Otto said with the greatest interest and with growing agreement, and that every objection by Konrad Hirsch seemed to me silly. Here was a man whose thinking was different from that of all who had taught me previously – grounded, natural, and pure; dubious assumptions simply fell away; for the first time I felt a harmony between thinking, feeling and action. I saw how he refilled our cups and looked after Olga, without interrupting the conversation. It had to do with 'progress': 'what do you mean by that?', Otto asked. K.H. said that, if he did not believe in progress, then he would not like to go on living. Otto was not able to tell, from my silent listening, the kind of impression that he had made on me.¹⁷

Reidemeister seemed able in this memoir to think back into the state of mind of her younger self: it is revealing that she compared Neurath to those who had taught her previously, implying that she considered him a potential mentor. Indeed, the subtitle of her later text about the professional collaboration with Neurath is 'my apprenticeship and partnership with Otto Neurath', reflecting her progress from being a junior colleague to becoming the joint secretary with Neurath of the Isotype Institute formed in 1942.¹⁸

They met again each day of the following week at the end of September 1924: on the Monday, Neurath chaired a lecture by Dutch architect Hendrik Berlage, and Reidemeister accompanied him:

Afterwards Otto took me by the hand, and we went home by foot, first through the city park, then past one of Otto Wagner's stations; we spoke about big cities and the country, about architecture and other arts, about my studies; here I mentioned my

lack of success with aesthetics, and that I could not understand Hegel. Then he said: 'but he *is* not understandable—it is good that you have noticed it'.¹⁹

When we parted at the end of Wednesday evening, the three of us still standing at the door of the living room, I said: 'I would like never to leave'. By this I wished to say: I would like to carry on living in this world, of thinking and feeling, and that I would like never to lose this friendship. Otto made an appointment with me for 2pm the next day ... He took me to the Prater and rowed me around the 'Old Danube'. There he gave me a kiss on the forehead. We went together to Boltzmannngasse with this cheering secret; it was an afternoon on which the [Moritz] Schlick circle was meeting; on this occasion there was a social get-together, to which all possible friends were invited.

When we were at home again in the evening, Otto told Olga: 'today I gave Mieke a kiss on the forehead'. At first I was shocked: 'oh, what will come of our secret?' However, then I understood that I had lost nothing, but gained much; what I had seen as an enriching of my life now came to be a turning point. Otto began to build me into his life; this was the first, important and, in Otto's view, indispensable and quite self-evident step. Olga laughed kindly and said: 'that was quick'. Over the following days I spent much time with Olga and could well understand Kurt's friendship with her; we also quickly came to say 'Du' with each other.²⁰

Reidemeister remembered that her relationship with Olga Hahn-Neurath developed 'wholly without conflict': she read to Olga, and took her for walks. It seems that Reidemeister's brother Kurt, who had been ambitious for her education from an early age, wanted her mainly to meet Olga, and he thought that she would see through Neurath's 'emptiness' soon enough. Neurath's prolific interests hardly corresponded to emptiness; many testified to his versatile energy—Robert Musil recorded in his diary that Neurath was 'now up and about a great deal, setting up contacts in all directions.'²¹ Reidemeister remembered his manifold enthusiasm during their first outings together:

He had many pet subjects, and I must know them all; there was such a wealth, that sometimes I had to ask for a moment of rest. He thought also that I should know with whom I was involving myself; he told me more than I wanted at that time to ask. But there was nothing in it that could make me uncertain.²²

Kurt Reidemeister attempted to 'prise' her away from Neurath during a visit to their family home in Brunswick in 1926:

He kept on and on at me for hours; he reproached me with being no longer an independent person, but merely an echo of Neurath; I had to get away from there as fast as possible. I fled to Otto. Was he right? I can no longer remember how Otto calmed me. He would have been just as dissatisfied as Kurt if I was an ‘echo’; ‘you are an autonomous person’, he said; and so he wanted it.²³

From the Vienna Method of Pictorial Statistics to Isotype

While she was in Vienna in autumn 1924, Reidemeister had been shown the Museum for Settlement and Town-planning by Neurath, as she recalled in a published account:

For me the picture-statistical charts in this small town-planning museum were a revelation. A new world opened up, which had hitherto been entirely closed to me. Neurath believed that I was the right collaborator—I myself could only say that I had no experience in this area.²⁴

In her memoir, she gave more details:

Otto saw how impressed I was, and asked me if I could also perhaps design things of this kind; but what should I say – I had never seen anything quite like it before. ‘But’, he asked, ‘if I started a museum where such charts are designed, would you be willing to join in?’ To which I replied, without qualifications: ‘yes’, and I meant it. Otto went on, more to himself: ‘now I know that I can do it’. He started on the preparations at once.²⁵

Robin Kinross (who was close to Reidemeister in her last decade) remarked that she was ‘always extremely modest and self-effacing, but here she did suggest that Neurath would hardly have embarked on the project of the new museum without her’.²⁶ Despite her lack of experience in designing exhibition charts, Neurath no doubt recognized her particular combination of skills (having studied science and technical drawing) as ideal for the kind of graphic work he had in mind for the Social and Economic Museum.

At first, Reidemeister worked part-time on various administrative and research tasks, and found it rather dull, but this soon changed when major exhibition commissions were received, including the Austrian section for Gesolei (Health Care, Social Welfare and Physical Exercise) in Düsseldorf in 1926. (Gesolei was the largest exhibition of the Weimar Republic, visited by 7.5 million people.) Reidemeister’s small

salary was supplemented by being paid (from publisher's advances) as Neurath's secretary for writing his book *Lebensgestaltung und Klassenkampf* (1928). Yet she was unwilling to act as an amanuensis who noted down any *bon mot* that fell from his lips:

I think it was something of a disappointment for Otto that I did not do more transcribing and collecting of his formulations, something that he certainly could have expected of a secretary; more, and better, ideas came to him when he spoke in conversation or lectured, than when he sat at a typewriter.²⁷

At the beginning of 1927, Reidemeister's working hours at the Museum were doubled and her salary was increased to match that of its best paid draftsperson [*Zeichner*], in respect of the fact that she now carried out 'predominantly scientific work'.²⁸ For work on major exhibitions, and for the first publications of pictorial statistics, a fruitful process of trial and error developed between Neurath & Reidemeister: 'My role in the production process was now clearly established, even though the name given to it – transformation – was not yet in use.' Reidemeister was the first and principal 'transformer' at the Vienna Museum, which Neurath described as the lynchpin who mediated between scientific advisors and graphic artists. This role could be seen as a prototype of the modern information designer. Reidemeister later referred to it as her 'designing work' [*Entwurfsarbeit*], although neither the term 'graphic design', nor really the concept of it, were current at that time. The term that Neurath coined for Isotype work was 'pictorial education' [*bildhafte Pädagogik*], and later he came to prefer 'visual education'.

Neurath set out the main principles of the Vienna Method in numerous articles published between 1925 and 1933. His account was largely impersonal, not presenting it as his own creation but as a result of teamwork.²⁹ Soon after Neurath's death, Reidemeister unequivocally referred to him as 'the creator of Isotype', and in historical accounts published in the 1960s and 1970s, she placed his defining influence in the foreground, but she also documented Isotype work in a descriptive way as a collaborative process. She referred to the transformer as a 'key person', but did not yet mention that it was partly the development of her work that defined this role.³⁰

The principal artist who worked on the Vienna Method in its formative years was the German Gerd Arntz, who joined the staff of the Museum in Vienna at the beginning of 1929. His major contribution was to design the pictograms that were the components of statistical charts. Reidemeister recalled that she 'hardly took part' in this process; instead, it was a 'fruitful collaboration' between Arntz and Neurath, partly assisted by Dutch artist Peter Alma and the Czech August Tschinkel.³¹

The production of pictorial charts was a collective and interdisciplinary process. The size of the team expanded for the major publication *Gesellschaft und Wirtschaft* (Society and economy, 1930), an atlas of 100 colourful charts, which Kurt Tucholsky described as a ‘masterpiece of pedagogical statistics’.³² This publication was launched at an exhibition in a municipal housing block, one of four eventual exhibition spaces of the Social and Economic Museum in Vienna, the principal of which was at the Volkshalle of the New Town Hall. The exhibitions provided important feedback from viewers, which Marie Reidemeister often collected while guiding group tours. In 1932 a Berlin branch of the Museum was established and, from 1931, personnel from Vienna went periodically to Moscow as consultants for the establishment of a Soviet institute for pictorial statistics named Izostat.

After the establishment of a dictatorship and the violent suppression of the workers’ movement in February 1934, Neurath, Olga Hahn and Reidemeister left Vienna and resettled in The Hague, sharing a house there together. They rented the two upper floors of a town house: Reidemeister occupied the top floor and Neurath the lower floor together with Hahn. Olga Hahn died in July 1937, on her fifty-fifth birthday, after an operation to remove a kidney; Reidemeister recalled that this was the only time that she saw Neurath cry. According to Reidemeister, Hahn had always cooked for the household—remarkably, given that she was blind. After her death, when Neurath and Reidemeister became extremely busy with various projects, they had hot food delivered to the house.³³

Arntz and two other members of the Vienna Museum team joined them in The Hague, and the work in visual education continued there. Marie Reidemeister proposed a new name for it: Isotype, an acronym for International System of Typographic Picture Education. This proved necessary for two books that Neurath agreed to write about the method in Basic English, Charles Kay Ogden’s stripped-down version of the English language intended as a lingua franca. Although the resulting editions, *International picture language* (1936) and *Basic by Isotype* (1937), were published in Neurath’s name alone, Reidemeister recalled that she ‘was concerned with the words as well as the pictures’, and was assisted in writing Basic English by Ogden’s ‘closest collaborator’ Leonora Lockhart.³⁴

Significant commissions now came from the USA, including a nationwide poster exhibition for the National Tuberculosis Association. For this, Neurath was invited for a lengthy stay in America (1936–7), and he arranged for Reidemeister to join him there, no doubt for a mixture of professional and personal reasons. (He had similarly insisted that she join him for the congress of the architectural association CIAM, which took place mainly on a boat trip from Marseilles to Athens in 1933.)

In the Netherlands, interesting work was slow to materialize, but in 1938 the department store De Bijenkorf accepted the proposal (initiated by Reidemeister) for a socio-historical exhibition on art, 'Rondom Rembrandt' (Around Rembrandt), shown in triplicate at branches in different cities. This, and a subsequent exhibition about railways, 'Het rollende Rad' (The rolling wheel), were innovative both educationally and technically.

On May 14, 1940, Neurath and Reidemeister fled from the German invasion of the Netherlands, making an adventurous escape in a motorized lifeboat full of refugees. They arrived in England amid a climate of fear about invasion and espionage, and both spent a total of about eight months interned as 'enemy aliens' in separate camps on the Isle of Man.

After their release in February 1941, Otto Neurath and Marie Reidemeister married in Oxford, where they founded the Isotype Institute in 1942. Almost immediately they became involved in work for the British Ministry of Information, including a pictorial booklet *Social Security* (based on the Beveridge Report), and animated sequences for documentary films directed by Paul Rotha, such as *World of Plenty* (1943) and *Land of Promise* (1946).

Otto Neurath died suddenly of a stroke on December 22, 1945, at the age of 63. Marie Neurath took over the sole leadership of the Isotype Institute, which moved from Oxford to London in 1948. Two areas stand out from her work in the following 25 years: writing and designing of educational books for young readers, and educational projects in West African countries. Reidemeister had already begun her work on children's books together with Neurath for the series 'Visual History of Mankind', but 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: for example, the book *Inside the Atom* (1956) benefitted from her exchange with nuclear physicist Otto Frisch.³⁵ Some of these books did not feature pictorial statistics, as early Isotype work had, but were more illustrative and diagrammatic.³⁶

Otto Neurath had remarked that the Isotype was being created 'not, finally, for the Viennese, but rather for the Africans',³⁷ reflecting his ambitions for it to be an international picture language. It was Marie Reidemeister who achieved this ambition with her work for governments in the Gold Coast (Ghana), Sierra Leone, and the Western Region of Nigeria during the 1950s, as these territories progressed towards independence from Britain. She traveled to Africa for research and in order to test her designs for information about farming, health, and democracy.³⁸

Domesticity

The change of location from Vienna to The Hague and then to Oxford had also meant a change in working conditions. This was not only the case in terms of staff, clients and projects. The working conditions had also changed spatially. As the editors of an edition on domesticity note, 'the domestic sphere is not external to knowledge making'.³⁹ Private households, houses and flats could often appear as key points of scientific or intellectual networks. This was particularly true for Marie and Otto Neurath: in Oxford, their work spaces and private spaces were in the same house. Reidemeister described in detail the situation at the second house where they lived and worked together in the Oxford suburb of Headington:

The garden was smaller but more enclosed, with a hedge and flowering shrubs and an apple tree; a door led direct from the living room into the garden; I often carried my work-table onto the grass. Otto liked to busy himself with the climbing roses; his work-room was on the first floor and also looked onto the garden; there was a room for the draftsmen looking on to the front garden between house and street. There was now more work and more collaborators, who came increasingly often and soon every day; yet this mixture of professional and private life produced no conflicts or disagreements of any kind; in England the private domain is respected; in Austria, Otto had thought that something like this was impossible.⁴⁰

Marie and Otto Neurath invited many people to their home, with whom they also collaborated professionally. These included the publishers Wolfgang Foges, Walter Neurath and Eva Feuchtwang (later Neurath).⁴¹ But it also included friends such as Ilse and Bernhard Reichenbach. Otto Neurath and Bernhard Reichenbach had been interned together on the Isle of Man. After their release the Reichenbachs then lived in London and repeatedly visited the Neuraths in Oxford to recover from the German bombing raids that were straining life in the capital. Ilse Reichenbach was soon to work for the Isotype Institute, and a fellow internee of Reidemeister, Ernie Braun, was employed as housekeeper and general assistant.⁴²

Did this situation influence Marie and Otto Neurath's collaboration? Was there one-sided dominance, were there 'male' domains and 'female' domains? There are no clear indications of this. Marie's account and other sources do not suggest that she devoted herself more to the domestic and Otto more to the professional parts of life. Nevertheless, there were different roles, possibly consolidated by the connection between home and work. Clients and interested parties for the work of the Isotype

Institute usually turned to Otto Neurath. He conducted the ‘business talks’—a role she admittedly took over after his death. When there were interviews or newspaper reports, it was mostly Otto Neurath who was at the centre. As we know from many letters, it was he who repeatedly took the train from Oxford to London (or somewhere else) while Marie did visual education work at home. It is probable that the gender-role conventions of that time resulted in Reidemeister taking more domestic responsibility: Otto Neurath wrote to Rudolf Carnap that, while he was lecturing and consulting, ‘Mary is very industrious in Isotype work and as housewife’. Carnap’s wife Ina replied to this that she admired Reidemeister in this respect, ‘since I am only a housewife!’⁴³

Autobiography and memoir

Neurath had become a successful author in the English-speaking world with his book *Modern Man in the Making* (1939), published by Knopf in New York. (Again, Reidemeister and Arntz had been close collaborators on this book, especially in its integration of text and pictures.) This reputation may have encouraged the book-packaging firm of Adprint to accept Neurath’s proposal for a ‘visual autobiography’ titled *From Hieroglyphics to Isotype*. The Viennese émigré who ran Adprint, Wolfgang Foges, suspected that Neurath’s proposal was an elaborate promotional piece for Isotype. Neurath was a voracious reader of autobiographies, but his own attempt was thematic in concentrating on his visual experiences in the ‘age of the eye’, as he called our era. Although his text contains personal anecdotes, it is unconfessional. Neurath had another autobiographical plan towards the end of his life – a dialogue memoir co-written with his American cousin Waldemar Kaempffert – in which he wanted to use personal recollections to ‘characterize the emotional, technical and intellectual climate, not our private lives’. He took the same approach in *From Hieroglyphics to Isotype*.⁴⁴ The development of Isotype as a method occupies only the last chapter of the book, in which he presents it as teamwork: Reidemeister is not mentioned by name and, although he does not seek to portray himself as the sole creator of Isotype, the trajectory of his autobiography lends itself to such an interpretation. The full text was only published much later, but soon after his death, an abridged version was edited by Reidemeister and Paul Rotha for publication. (She is not mentioned in that version either, although she is pictured and captioned alongside Neurath above the title.)⁴⁵ Decades later, Reidemeister came to doubt the value of this text, remarking privately that it should not be taken too seriously, and that Neurath’s early visual impressions were not anything special.⁴⁶ Yet, just a few years before that (in print), she recalled

Neurath's particular gift of visual memory: 'Once I went with him to the greenhouse in Schönbrunn and complained that he rushed through without looking. He said: "Shall I draw you the flower we passed a few yards back?" He did, and I compared and was amazed.'⁴⁷

The two memoirs that Reidemeister wrote in her eighties are distinct from each other. The longer text, 'What I remember', contains much of a private nature, and she never envisaged it for publication.⁴⁸ The shorter text about her 'apprenticeship and partnership with Otto Neurath' was written at the request of Robin Kinross for a planned book project. Kinross made an English translation of this and Reidemeister approved it shortly before her death in 1986; it was finally published in *The Transformer* (2009).

Earlier, short memoir texts by Reidemeister formed part of the section 'Memories of Otto Neurath' in the first collected edition of his writings, published in English as *Empiricism and Sociology* (1973), the German texts having been translated by Reidemeister and Paul Foulkes. As she noted in her preface, Neurath lamented on his last day of life that nobody would document his intellectual work. He had been employed as an academic for only a brief period (1907–14) as a lecturer at the Neue Wiener Handelsakademie. His chances of an academic career were ruined by his political activity in Germany, which led to the revocation of his habilitation by Heidelberg university, and by anti-Semitism in Austria. Neurath's participation in the Vienna Circle took place among university teachers (Rudolf Carnap, Philipp Frank, Hans Hahn, Moritz Schlick), but Neurath was considered an outsider, not least for his irreverence of academic philosophy, but also for the political tendency of his thinking. His release from internment as an enemy alien in Britain during World War II was effected by setting up some visiting lectures for him at Oxford University, but this was a temporary arrangement, and Neurath did not seek further involvement there. He seemed to view the work in visual education as equally important. Reidemeister apparently held no ambition to be an academic, but her editorial work on *Empiricism and Sociology* did much to recover Neurath's intellectual legacy in all its breadth, which had been largely forgotten after 1945.

Since Neurath's death, in addition to compiling a bibliography of his writings, Reidemeister had been collecting memoirs of Neurath from his former colleagues and friends, and these fed into the initial 'Memories' section in *Empiricism and Sociology*. This book came together soon after she retired from Isotype work in 1971, with the help of her co-editor Robert Cohen, an American philosopher of science. She commented that she initially had no intention of adding her own memories of Neurath, but she was encouraged to do so by Cohen – hence the book includes her

informative essay about escaping with Neurath from the Netherlands.

Archival material concerning one of the memoirs, by Wolfgang Schumann, illuminates how Reidemeister shaped the picture of Neurath given in *Empiricism and Sociology*. Schumann and Neurath met around 1908, and they worked together at the Museum of War Economy in Leipzig and on socialization projects after the First World War. When Neurath was appointed president of the Central Economic Office in Munich in March 1919, he recruited Schumann to join his team again, but their friendship was soured for a long time afterwards by the political complications that ensued from the Bavarian Revolution.⁴⁹

As a result of correspondence between Reidemeister and Schumann after Neurath's death, it was agreed that he would write a memoir of his encounters with Otto Neurath. His typescript comprises 15 pages and a half-page addendum on Neurath's Jewishness, in which he remarked that Neurath had 'suffered' from it.⁵⁰ In an accompanying letter, he hinted at a possible second addendum about Neurath and women: 'Throughout his life Neurath was frequently associated with women. He was passionate and an immensely impressive, often funny and whimsically eloquent man. He could be exceedingly amiable and often was. Thus he had relationships with many women. Many a novel could be written about him. But these brief hints may suffice.'⁵¹ These vaguely suggestive formulations must have seemed misleading to Reidemeister, who objected to them (although her strongest objection was to Schumann's ignorance of her own role in the development of Isotype).

Schumann's text was shortened to only three pages in its published form, and does not include any mention of Neurath's Jewishness nor of his popularity with women. As noted above, Reidemeister did include (amended) remarks about Neurath's first two wives, but it was perhaps the innuendos in Schumann's letter that spurred her to add her personal footnotes on this matter to his text. Neurath seemed not to have 'suffered' from being partly Jewish; it would perhaps be more accurate to say that he suffered from anti-Semitic hostility, and so Reidemeister was probably justified in not including this remark.⁵² However, this example raises the question of editorial impartiality when others' recollections of a person do not accord with those of an editor who knew that person intimately.

The implication by Schumann that there was some salacious dimension to Neurath's relationships with women is echoed by a more recent remark made by Karl Sigmund in his book about the Vienna Circle, *Exact Thinking in Demented Times*. Concerning Neurath's relationship with his colleague in the Viennese settlers' movement, architect Margarete Lihotzky, Sigmund remarks that 'she fell for the incorrigible seducer Otto Neurath and became his lover for a short time'.⁵³ Schütte-

Lihotzky (as she became known after her marriage to architect Wilhelm Schütte in 1927) summed up this time much later: ‘My work brought me into daily contact with Neurath. In addition, we were also personal friends.’ More revealingly, she wrote: ‘In his enormous frame ... resided a subtly reactive, imaginative sensitivity.’⁵⁴ They certainly had a close personal relationship: Otto Neurath wrote fairy tales and made paintings for her, some of which survive in her archive. But a short romantic connection to Schütte-Lihotzky followed by a long-lasting relationship with Marie Reidemeister hardly seem to warrant a description of Neurath as an ‘incorrigible seducer’.

Schütte-Lihotzky contributed an essay ‘My friend Otto Neurath’ to a section of memoirs in the book *Arbeiterbildung in der Zwischenkriegszeit* (Workers’ education in the interwar period, 1982), which Friedrich Stadler compiled in parallel with an exhibition about Otto Neurath and Gerd Arntz. In it she recounted her five-day stay with Neurath and Reidemeister in The Hague in 1937, which ‘were agonizing days’: ‘We no longer understood each other politically, there were endless, completely fruitless debates.’⁵⁵ She had been working in the Soviet Union for several years, and this was the last time that they met. At no point in her text did she clarify precisely the cause of the dispute between the Social-Democrat Neurath and the Communist Schütte-Lihotzky (who, however, did not join the Communist Party until later, in 1939). This may be partly due to an intervention by Reidemeister: she was also a contributor to the book in question, though not an editor of it; but she read Schütte-Lihotzky’s text along with several other contributions prior to publication, and suggested numerous corrections.

Schütte-Lihotzky claimed in a first draft of her contribution that Otto Neurath had already ‘moved to the extreme right of Social Democracy’ at the time of their dispute in The Hague.⁵⁶ Marie Reidemeister strongly denied this and successfully requested a correction. She wrote directly to Schütte-Lihotzky: ‘No right-wing movement occurred with Neurath’; instead, the reason for the rift was ‘the misfortune that you had become a devout Communist’. Schütte-Lihotzky, strenuously denied that: ‘I was not a Communist at that time and did not feel that way, and therefore cannot say that I was. And certainly not a believer.’⁵⁷ Schütte-Lihotzky learned later that Otto Neurath had organized a collection of money to support her after her release from four years of Gestapo custody at the end of World War II. She concluded her memoir of Neurath by saying that, in him, she had lost ‘a good, loyal and caring friend’.⁵⁸

Reidemeister also objected to some points in the memoir text written by the social psychologist Marie Jahoda, who Neurath had invited to work at the Social and Economic Museum for a short time in 1932. Jahoda recalled that ‘The office in which

we worked was animated, sustained and occasionally disrupted by Otto Neurath's personality and ideas. Otto Neurath loved to discuss his philosophical ideas and the day's events with his younger colleagues whenever it suited him.' She evidently also implied that it was Reidemeister who kept things in order. Reidemeister felt that this was misleading, and wrote to Stadler: 'What M.J. says about me is not true at all, and Otto is shown in a false light. *He* was the good organizer, of himself and his staff; everything went on without interruption, even if he enjoyed talking to the young people in between.'⁵⁹ Any mention of Reidemeister herself was excised from Jahoda's essay, as published, but the rest of her recollection remained. Yet Reidemeister successfully requested that an untrue statement that Neurath fled The Hague in 'pyjamas and overcoat' be qualified as a rumour (in fact, they had time to pack a suitcase in readiness for their escape).⁶⁰

Stadler may have experienced Reidemeister's intervention as behaviour befitting the archetypal protective widow, and apparently took the view that memories, when not factually incorrect, are more in the nature of opinions, which are not ripe for correction. Reidemeister took the reasonable view that it was her duty to correct facts (especially those she witnessed personally), but she did not seem to idealize Neurath, only wanting to establish for him credit where it was due. And she was not obstructive in terms of access to his archive and estate, instead being actively occupied with cultivating his legacy and that of Isotype. Thanks to her careful preservation of correspondence and working material, and placement of it in public collections, research and scholarship about Neurath and Isotype has been enriched.⁶¹ Moreover, the archival holdings relating to her own work in educational book design allows her pioneering contribution to be brought more fully to light.⁶²

Marie Neurath's involvement in biographical remembrance of Otto Neurath, and in editing his works, can be considered in the context of the phenomenon of 'scientific persona'. It refers to a collective entity that always reaches beyond the individual. As Daston and Sibum put it: 'The word "scientist" bears witness to a persona that resists the multiplication of identities even at the disciplinary level, not to speak of the level of the individual.'⁶³ They recommend that we reflect on the stubborn collectivity of words like *der Wissenschaftler*, *le scientifique*, the scientist: although we have a plethora of names for scientific specialists (entomologists, crystallographers, mycologists, chemists, ornithologists, etc.), and although specialist journals and societies have notoriously fragmented the unity of science as both a corpus of knowledge and a social institution, both practitioners and laymen nonetheless cling to the collective denomination 'scientist' and its various cognates in other languages.⁶⁴

The scholar and educator who unifies science, democratizes knowledge and speaks

to the people was a self-image of Otto Neurath, but also one that Marie Reidemeister drew of him. He was never the institutionally anchored, academic scientist, but one who propagated a new understanding of science. He overcame borders, both those of scientific disciplines and those between science and society.

Marie Reidemeister was also a pioneer, in terms of women in graphic design, as a key figure in the origins and development of Isotype. She became the principal ‘transformer’ at the Social and Economic Museum in Vienna, headed the Isotype Institute in Oxford together with Otto Neurath (joint secretaries and directors of study) and continued the work for almost 30 years after Neurath’s death.

After the end of the Second World War, the Austrian Social and Economic Museum was founded in Vienna as the successor institution to the Social and Economic Museum in Red Vienna. Gerd Arntz worked for the Dutch Foundation for Statistics, and Rudolf Modley (a former employee from Vienna) had already established a business for pictorial statistics in the USA. Nowhere, however, was the continuity with the visual education work begun in 1925 so clear as at the Isotype Institute, which Marie Neurath led in England until 1971.

Marie Reidemeister developed as a young woman from an apprentice of Otto Neurath to a professional designer who had a decisive influence on the development of Isotype. She was not only the ‘inventor’ of its acronym (International System of Typographic Picture Education), but helped shape the project longer than anyone else. This has only been partially reflected in the historiography to date. As the author of the foreword to a series of ‘Lives of Woman in Science’ put it, ‘marriage posed a real—but rarely articulated—risk that an individual spouse’s work would not get independent recognition’.⁶⁵ For Neurath and Reidemeister, this view must be differentiated somewhat, because they formed a collaborative couple long before their marriage, which did not significantly change their collaboration.

Other collaborative couples such as the Myrdals, the Russells or the Mead-Batesons were known not only in their professional environment, but also to a broad public through countless media reports. Without doubt, they had ‘*a certain degree of celebrity status, often mixed with an equal degree of notoriety*’.⁶⁶ Although Reidemeister and Neurath undoubtedly had reputations, they did not have such a form of celebrity and notoriety. The resulting risk that her partner might be forgotten influenced her work in the following decades. Given the age difference between them (and Neurath’s untimely death), Reidemeister survived him by several decades and remained active. However, she not only continued to work with Isotype for a long time, but also played a decisive role in shaping both her husband’s biography and the history of Isotype. This was not a process free of conflict and contradiction. For there were competing

narratives and struggles for interpretation with the remembered history of other contemporaries: Wolfgang Schumann, Margarete Schütte-Lihotzky and Marie Jahoda may be mentioned once again as examples. For Reidemeister, the difficulty was not to let her husband's work be forgotten, but at the same time not to conceal her own role in Isotype's history. Occasionally, Marie Reidemeister resisted when others failed to adequately evaluate her work but much more often she intervened when Neurath's achievements were not properly appreciated.

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About the Authors

Günther Sandner is a political scientist and historian. He published a biography of Otto Neurath in 2014 and edited, among others, a book on Rosa and Anna Schapire in 2017 (together with Burcu Dogramaci). He heads the research project *Isotype: Origin, development, and legacy*. In 2022, his book *Weltsprache ohne Worte. Rudolf Modley, Margaret Mead und das Glyphs-Projekt* will be published. He is a research fellow at the Institute Vienna Circle at the University of Vienna.

Christopher Burke is a designer, and design historian. He co-edited Otto Neurath's 'visual autobiography' *From hieroglyphics to Isotype* (2010) and was co-curator of the exhibitions 'Isotype: international picture language' (Victoria & Albert Museum, London, 2010) and 'Time(less) signs: Otto Neurath and reflections in contemporary Austrian art' (Austrian Cultural Forum, London, 2014). Burke was also a major contributor to the book *Isotype: design and contexts, 1925–1971* (2013).

Notes

¹ FWF – Austrian Science Fund: *Isotype. Origin, development, and legacy* (P31500).

² Neurath, Otto, 'Bildstatistik nach Wiener Methode in der Schule (1933)', in: Haller, Rudolf and Robin Kinross (eds.), *Otto Neurath. Gesammelte bildpädagogische Schriften*, Wien: Hölder-Pichler-Tempsky, 1991, 265.

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¹⁰ Sandner, Günther, 2014 (41–42). On Anna Schapire, see Sandner, Günther, 'Anna Schapire – Ein intellektuelles Porträt', in: Dogramaci, Burcu and Günther Sandner (eds.), *Rosa und Anna Schapire, Sozialwissenschaft, Kunstgeschichte und Feminismus um 1900*, Berlin: AviVa, 2017, 119–141.

¹¹ Sandner, Günther 2014 (57–59).

¹² For the purposes of brevity and clarity, Marie Reidemeister-Neurath will be referred to in this article principally as Marie Reidemeister, as indeed she remained for most of her time together with Neurath.

¹³ Neurath, Otto, *Empiricism and Sociology*, (eds.) Neurath, Marie and Robert S. Cohen, Dordrecht, Boston: Reidel, 1973 (81). Reidemeister had never known Anna Schapire, of course.

¹⁴ The first draft of 'An was ich mich erinnere' is dated December 1980, and was revised in 1982. In 1984 an English translation, 'What I remember', was made by Robin Kinross and approved by Marie Neurath. The original typescript is in: University of Reading, Otto and Marie Neurath Isotype Collection (IC), 'What I remember', unpublished typescript, 1984. All citations in the following are taken from this translation, with kind permission of Robin Kinross. Only in very rare instances are minor facts in her memoir not borne out by historical evidence. In his obituary of Marie Neurath, Kinross wrote: 'And as well as her concern for accurate and honest statement, she had a phenomenally exact memory: she was an exemplary recorder of events.' Neurath, Marie and Robin Kinross 2009 (120).

¹⁵ Reidemeister and Minna Specht would meet again much later, during their internment on the Isle of Man (1940/1).

¹⁶ University of Reading, IC, 'What I remember', unpublished typescript, 1984, 23–24.

¹⁷ University of Reading, IC, 'What I remember', unpublished typescript, 1984, 27. No doubt the diminutive nickname 'Mieze' had been communicated to Neurath by Reidemeister's brother Kurt: it was how her three brothers (two older, one younger) commonly referred to her. She also recalled that her mother took to calling her 'Miezele'.

¹⁸ The original German title of that text is 'Lehrling und Geselle von Otto Neurath | in Wiener Methode und Isotype'. See Neurath, Marie and Robin Kinross, 2009 (9).

¹⁹ University of Reading, IC, 'What I remember', unpublished typescript, 1984, 28. She recalled: 'Otto told me of the assets of life in a city which is too big for the irritations of gossip in smaller places.' Neurath, Marie, '26 September 1924 and After', in: Neurath, Marie, '26 September 1924 and After', in: Neurath, Otto, *Empiricism and Sociology*, (eds.) Neurath, Marie and Robert S. Cohen, Dordrecht & Boston: Reidel, 1973.

²⁰ University of Reading, IC, 'What I remember', unpublished typescript, 1984, 28–29.

²¹ Musil, Robert, *Diaries 1899–1941*, Translated by Philip Payne, New York: Basic Books, 1999 (236).

²² University of Reading, IC, 'What I remember', unpublished typescript, 1984, 30.

²³ Idem, page 33.

²⁴ Neurath, Marie, 'Zum 40. Geburtstag des Gesellschafts- und Wirtschaftsmuseums in Wien', in: *Arbeit und Wirtschaft* 6 (1965) 24.

²⁵ University of Reading, IC, 'What I remember', unpublished typescript, 1984, 29. In a short essay published a couple of years before writing this, she wrote: 'Ja, ich hatte bereits beschlossen mitzuarbeiten, denn die ganze Atmosphäre in Wien und im Kreise Neuraths hatte mich gefangengenommen.' ('Yes, I had already decided to cooperate, because the whole atmosphere in Vienna and in Neurath's circle had captivated me.'). Neurath, Marie, 'Otto Neurath und die "Wiener Methode der Bildstatistik"', in: *Arbeit und Wirtschaft* 12 (1978) 3.

²⁶ Neurath, Marie and Robin Kinross 2009 (10).

²⁷ University of Reading, IC, 'What I remember', unpublished typescript, 1984, 39.

²⁸ Österreichische Nationalbibliothek, Ser.n. 31.878, Letter from Neurath (as director of the Museum) to Reidemeister, 10 February 1927. Reidemeister was also registered at the philosophy faculty of Vienna University between 30 April 1925 and Easter 1927. Only two things in Neurath's life were closed to her, she recalled: his classes at the Arbeiterhochschule (Worker's academy) and Vienna Circle meetings. Neurath, Marie 1973, 59.

²⁹ Reidemeister also wrote a few methodological essays during that period; see the bibliography in Burke, Christopher, Eric Kindel and Sue Walker (eds.), *Isotype: Design and Contexts 1925–1971*, London: Hyphen Press, 2013.

³⁰ Neurath, Marie, 'An Isotype Exhibition on Housing', in: *RIBA Journal* 53:12 (1947) 601; Neurath, Marie, 'The origin and theory of Isotype', in: *Yearbook of Education* (1960) 115. In Neurath, Marie 1974, 136, she referred to the role by customary default with 'he'. Indeed, Friedrich Bauermeister also worked as a transformer at the Vienna Museum.

³¹ Neurath, Marie and Robin Kinross 2009 (44). See also Arntz, Gerd, 'Otto Neurath, ich und die Bildstatistik', in: Stadler, Friedrich (ed.), *Arbeiterbildung in der Zwischenkriegszeit. Otto Neurath – Gerd Arntz*, Wien: Löcker, 1982, 31–34.

³² Tucholsky, Kurt (writing as Peter Panter), 'Auf dem Nachttisch', (March 1931), in *Gesammelte Werke*, Band 9, Reinbek: Rowohlt, 1975 (144).

³³ University of Reading, IC, 'What I remember', unpublished typescript, 1984, 62–63.

³⁴ Neurath, Marie and Robin Kinross, 2009 (47–49).

³⁵ University of Reading, IC, 'What I remember', unpublished typescript, 1984, 99. Frisch had in fact been mentored by Olga Hahn in Vienna as a young man, as he told Reidemeister.

³⁶ Neurath, Marie, 'Report on the Last Years of Isotype Work', in: *Synthese* 8:1/2 (1950/1951)

³⁷ Neurath, Marie, 'Otto Neurath, Wiener Methode, Isotype – ein Bericht', in: Friedrich Stadler (ed.), *Arbeiterbildung in der Zwischenkriegszeit. Otto Neurath – Gerd Arntz*, Wien: Löcker, 1982, 29–30.

³⁸ See Kindel, Eric, 'Isotype in Africa, 1952–8', in: Burke, Christopher, Eric Kindel and Sue Walker (eds.), *Isotype: Design and Contexts 1925–1971*, London: Hyphen Press, 2013, 448–497.

³⁹ Opitz, Donald L., Staffan Bergwik and Brigitte Van Tiggelen, 'Introduction: Domesticity and the Historiography of Science', in: Opitz, Donald L., Staffan Bergwik and Brigitte Van Tiggelen (eds.), *Domesticity in the Making of Modern Science*. New York: Palgrave Macmillan, 2016.

⁴⁰ University of Reading, IC, 'What I remember', unpublished typescript, 1984, 81.

⁴¹ Idem, page 79.

⁴² Idem, page 87.

⁴³ Neurath to Rudolf Carnap, 16 June 1945, and Ina Carnap to Neurath, 24 August 1945, both in Cat, Jordi and Adam Tamas Tuboly 2019 (645, 652).

⁴⁴ Neurath, Otto 2010 (ix, xix).

⁴⁵ Published in Bruce Milne (1946). Reidemeister remarked that Rotha 'stylistically reworked' Neurath's text. Österreichische Nationalbibliothek, Nachlaß

Otto und Marie Neurath, 1242/22-3, Letter to Wolfgang Schumann, 4 March 1947.

⁴⁶ Letter from Marie Neurath to Robin Kinross, 1 May 1977 (Private Collection). She remarked that Neurath's economic writings should be taken more seriously. Neurath himself stated that he thought his visual experiences were 'representative' and 'general'. Neurath, Otto 2010 (126).

⁴⁷ Neurath, Marie 1973 (59).

⁴⁸ 'What I remember' is prefaced by the dedication 'told and written down for Henk Mulder', but could she only have had one or two readers in mind? Robin Kinross recalls that she was an admirer of Elias Canetti's autobiographical writing and tried to emulate it somewhat in her own (Interview Christopher Burke with Robin Kinross, 13 August 2019).

⁴⁹ On the role of Wolfgang Schumann in Otto Neurath's Life, see Sandner, Günther 2014 (46, 99–103, 112–115).

⁵⁰ Österreichische Nationalbibliothek, Ser. n. 31.871, Schumann, Wolfgang, 'Kleine Beiträge zu Otto Neuraths Lebensbeschreibung', Typescript, 1951.

⁵¹ Österreichische Nationalbibliothek, Ser. n. 31.872, Wolfgang Schumann to Marie Neurath, 3 February 1951.

⁵² See the discussion of Neurath's Jewish background in the introduction to Neurath, Otto 2010.

⁵³ Sigmund, Karl 2017 (183). The word 'seducer' does not appear in Sigmund's original German text where he wrote that Lihotzky 'verfiel der Aura des unverbesserlichen Neurath und wurde kurzfristig seine Geliebte' Sigmund, Karl, *Sie nannten sich Der Wiener Kreis: exaktes Denken am Rand des Untergangs*, Wiesbaden: Springer, 2015 (165).

⁵⁴ Schütte-Lihotzky, Margarete, 'Mein Freund Otto Neurath', in: Friedrich Stadler (ed.), *Arbeiterbildung in der Zwischenkriegszeit. Otto Neurath – Gerd Arntz*, Wien: Löcker, 1982, 40. Similar sentences appear in Schütte-Lihotzky, Margarete, *Warum ich Architektin wurde*, Salzburg: Residenz, 2004 (80). For more on the relationship between Schütte-Lihotzky and Neurath, see Sandner, Günther, 'Freundschaft und Entfremdung. Margarete Schütte-Lihotzky und Otto Neurath', in: Bois, Marcel and Bernadette Reinhold (eds.), *Margarete Schütte-Lihotzky. Architektur. Politik. Geschlecht. Neue Perspektiven auf Leben und Werk*, Basel: Birkhäuser, 2019.

⁵⁵ Schütte-Lihotzky, Margarete 1982, 42.

⁵⁶ Universität für angewandte Kunst Wien, Margarete Schütte Lihotzky Nachlass, Schütte Lihotzky, Margarete, 'Mein Freund Otto Neurath', Typescript, 1981, 5.

⁵⁷ Universität für angewandte Kunst Wien, Margarete Schütte Lihotzky Nachlass, Correspondence between Marie Neurath and Margarete Schütte-Lihotzky, November 1981. Reidemeister recalled in her memoir that Social Democrats were called 'Social Fascists' in Moscow, but also that Schütte-Lihotzky and her colleagues felt alienated by the officially approved classicist architecture. University of Reading, IC, 'What I remember', unpublished typescript, 1984, 49–50.

⁵⁸ Schütte-Lihotzky, Margarete, 1982, 42.

⁵⁹ Wiener Kreis Gesellschaft, Private Archive Friedrich Stadler, Marie Neurath to Friedrich Stadler, 18 December 1981.

⁶⁰ A remark remains in Schütte-Lihotzky's memoir that Neurath planned to return to Vienna after the war. On reading this repeated in a subsequent publication by Stadler, she responded: 'I never heard anything about such a plan, and I would have been the first to know about it.' Wiener Kreis Gesellschaft, Private Archive Friedrich Stadler, Marie Neurath to Friedrich Stadler, 28 February 1983.

⁶¹ See Twyman, Michael, 'Isotype und die Universität Reading', in: Stadler, Friedrich (ed.), *Arbeiterbildung in der Zwischenkriegszeit. Otto Neurath – Gerd Arntz*, Wien: Löcker, 1982; Mulder, Henk, 'The Vienna Circle Archive and the literary remains of Moritz Schlick and Otto Neurath', in: *Synthese* 64 (1985) 375–387.

⁶² See the virtual exhibition: [Neurath, Marie], 'Marie Neurath Picturing Science', in: *Transforming Science for Young People: Marie Neurath and Isotype Books for Children*, 2020, www.marieneurath.org. Date accessed: 30 June 2021.

⁶³ Daston, Lorraine and H. Otto Sibum 2003, 2.

⁶⁴ Idem, page 4.

⁶⁵ Abir-Am, Pnina G., 'Series Foreword', in: Pycior, Helena M., Nancy G. Slack and Pnina G. Abir-Am (eds.), *Creative Couples in the Sciences*, New Brunswick, NJ: Rutgers University Press, 1996, x.

⁶⁶ Abir-Am, Pnina G., 'Collaborative Couples Who Wanted to Change the World. The Social Policies and Personal Tensions of the Russells, the Myrdals, and the Mead-Batesons', in: Pycior, Helena M., Nancy G. Slack and Pnina G. Abir-Am (eds.), *Creative Couples in the Sciences*, New Brunswick, NJ: Rutgers University Press, 1996, 278, italics in original.