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Chapter 5
Learning to see: Otto Neurath's *Visual* autobiography

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From Hieroglyphics to Isotype: A Visual Autobiography was published posthumously (2010) drawing on drafts from the 1940s. Narrated from Otto Neurath's position as a child and youth in the domestic and urban context of *fin de siècle* Vienna, the book sets out the ways in which 'learning to see' crystalized for the author. Attentive to modalities of seeing in a period brimming with advertisements, cinema, and museum exhibitions, and convinced that knowledge through images would play an increasing role in the future, Neurath assembled an account of his visual experiences that sought to encapsulate the development of a 'visual consciousness' (Neurath 1944: 1).

Three themes can be identified in the *Autobiography*: experiences of seeing, visual education, and the democratization of knowledge. The present examination will be guided by the conceptual distinction between *prendre position and prendre parti* ('taking position/taking sides') elaborated by Georges DidiHuberman (2009), who in turn follows Walter Benjamin's philosophical concern for actualizing the political and epistemological dimensions of *Erfahrung* ('experience').[1] Despite the considerable distance between Didi-Huberman and Neurath's approaches, this conceptual distinction allows the tensions in the act of seeing throughout the *Autobiography* to be highlighted; tensions explored in the notion of visual education, in techniques and styles of visualization, in the childhood games described therein, and in the playful and mobile condition of the child's visual memories. Once they are recognized as inherent to visual experience and knowledge, these tensions may be grasped in their potential political dimension.

The *Autobiography* is here situated in relation to contemporary studies on visuality and knowledge,[2] and is attentive to modalities whereby contemporary architecture still activates some of Neurath's most problematic aims, notably in the relationship between uses of graphic language and an aspiration to enhance democratic societies. Harun Farocki's video-installation *Deep Play*

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is then presented as a counter-position, putting at stake the opposition between taking position and taking sides: a decisive distinction when considering the political and the visual in architecture.

The thematic structuring of the book is chronological, tracking what Neurath calls the development of an 'eyeconsciousness' or 'visual consciousness' (Neurath 2010: 5). It traces his childhood years from 1882 to 1891, his youth from 1892 to 1906, and his adult life, specifically his university years and his 1923 appointment as director of the Visual Education Institute. Neurath seeks throughout to channel memories of his visual life into the parameters of visual communication, understood as the means by which visual materials may be transformed into informationbearing agents. This taking sides in relation to the visual (restricted to factual information to be communicated) feeds into with how the visual is grasped in his *Wiener Methode der Bildstatistik* (project by Neurath 1933), which from 1935 became the Isotype project (Neurath [1936] 1980).[3]

Neurath maintained that Isotype was an international mechanism for visual education. Crucially, he believed that translating information into visible and accessible form would enhance democratic systems. Given his interest in ways of seeing that would be intelligible, the *Autobiography* formed an integral part of the urgent task of making visual media 'digestible' for the common man (Neurath 2010: 4). To develop 'eyeconsciousness' (Neurath 2010: 5) is to shape seeing into accessible comprehension and communication using visualization techniques, in conformity with what Isotype claimed to render visible.

Lesson/game

In the *Autobiography* the visual seems to be restricted chiefly to a 'visible grasp' (DidiHuberman 2005: 192), that is, to a production of stable units of meaning through which 'a narrative sequence appears before our very eyes to offer itself for reading' (DidiHuberman 2005: 13). However, this will not preclude the detection of moments that, by Neurath's account, disrupt the stability of the visible world. These moments are inherent to the very notions of the 'development of eye consciousness' and 'visual education', though on the one hand, any development of a visual consciousness – knowing how to see well – is the development of a knowledge that must at least in part elude consciousness, while on the other

> […] *la pédagogie de la lecture, – qui va de pair* […] *avec la pédagogie des images – est elle-même un champ de bataille où se recontrent puissances d'asservissement et puissances de libération, contraintes morales et agencements ludiques, chaînes de la leçon et déchaînements du jeu.*
>
> (Didi-Huberman 2009: 198)[4]

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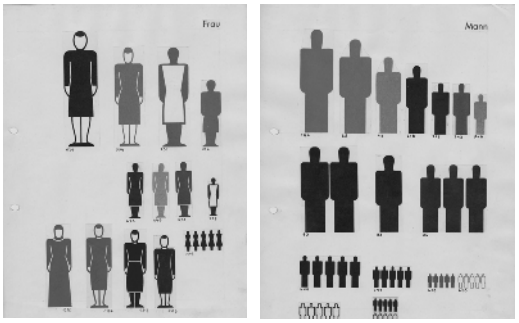

Figure 1: Figures of 'man' and 'woman' from the *Isotype Picture Dictionary*, I.C. 4/3, Otto and Marie Neurath Isotype Collection, University of Reading.

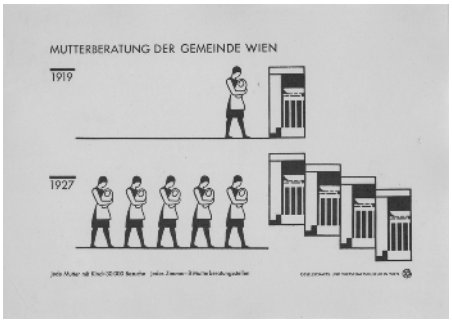

Figure 2: MUTTERBERATUNG DER GEMEINDE WIEN. *Gesellschaft und Wirtschaft*, I.C 5/3, Otto and Marie Neurath Isotype Collection, University of Reading.

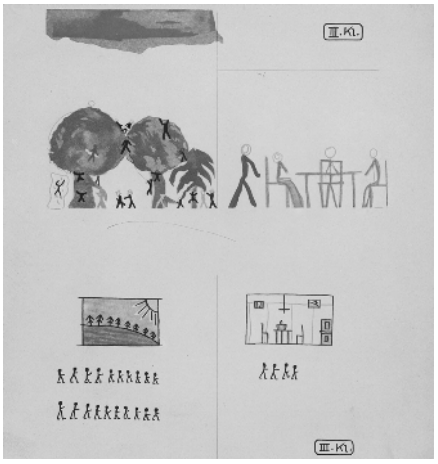

Figure 3: Drawings made by primary school children, I.C. 3.2/87, Otto and Marie Neurath Isotype Collection, University of Reading.

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The *Autobiography* is effectively located in a tension between *jeu ouvert* ('open game') and *parcours obligé* ('forced route') (DidiHuberman 2009: 211). On the one hand, there is the experience of a forced form of reading, the standardization of the sign and the establishment of coordinates of the visible in series of graphic arrangements. Neurath calls this the 'technique of visualization' of Isotype (in Neurath and Cohen 1973: 246). To take one example, human figures selected from the *Symbol Dictionary* (the catalogue of standardized Isotype signs) may be arranged by size, colour, position and quantity, to reveal as a whole that, in the 'Consulting service for mothers in the Vienna community', between 1919 and 1927 the number of visits increased (Figures 1 and 2). On the other hand, there is the *playful* experience in Neurath's childhood games that eludes any homogenization of the sign or technique of visualization. When Neurath's group conducted investigations in schools to study the potential scope of the graphic system (Figure 3), though some human figures in the children's drawings loosely followed the stated instructions (to make sequenced chains of lessons), other figures were dispersed across treetops and trunks, thus playfully sidestepping a forced route.

The question arises as to where the child's act of apprehension is to be located. It is not about verifying a lesson learned by putting the figures together in the right order, but rather about drawing, which is a play with figures, even a play with signs. Playing with signs prior to understanding their content evokes the *Primer*, a book which facilitates the apprehension of letters over and above the understanding of the message they carry (DidiHuberman 2009: 198). 'Playful seeing' here gives rise to learning, and Neurath himself mentions how he would 'visually absorb' images and maps in books (Neurath 2010: 24) even before learning to read. He also relates his encounter with images that were to generate ideas or further images, later associated with further experiences or sites, adding: '… one ought never to overlook the possible educational importance of such details, which do not belong to any of the usual subjects covered by a wellarranged curriculum, but rather come to us by chance' (Neurath 2010: 12).

Playful agencements

> My most rudimentary activity in the field of combining elements was when, as a small child, I turned over my mother's mending boxes to select the most attractive buttons of various kinds […] I imagined the carpet to be a large piece of country on which the buttons, carefully grouped, could move about. Sometimes they represented armies with commanders […] The rugs I imagined as little islands, sometimes even as the home of Robinson Crusoe.
>
> (Neurath 2010: 13)

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As a child, Neurath already knew how to identify the streets of his city on a map; a reading experience learnt walking through the Vienna streets. Creating geometric forms on the carpet with buttons and, later, lead soldiers enabled him to understand battles and military exercises represented in schematic form in books (Neurath 2010: 15). A rich series unfurls: the carpet of his childhood home, his mother's box of buttons, storybooks with maps, the city of Vienna, schematic drawings of battles. 'Learning to see' brings with it the potential of an association of experiences that passes by way of play, objects, places and times. There is something here of Walter Benjamin's 'untidy child', who does not collect things just to file them away in drawers, but so that imagination can proliferate.[5]

> Each stone he finds, each flower picked and each butterfly caught is already the start of a collection, and every single thing he owns makes up one great collection […] His drawers must become arsenal and zoo, crime museum and crypt. 'To tidy up' would be to demolish an edifice full of prickly chestnuts that are spiky clubs, tinfoil that is hoarded silver, bricks that are coffins, cacti that are totempoles and copper pennies that are shields.
>
> (Benjamin 1979: 73–74)

This potential propagation of imagination is evinced also in other games that Neurath recounts in relation to the Isotype mission.[6] Particular attention is paid to games where new combinations can be created out of given forms: matching together cut-out figures on a background, concocting market scenes and Alpine or desert landscapes, combining given elements by cutting and assembling.

Assembling separate units is a key activity in Isotype, but there they form a specific order governed by linking up standardized printed symbols to create 'visual arguments' (in Nemeth and Stadler 1996: 292). For example, 'Economic Scheme' (Figure 4) presents four principal levels of occupation differentiated by colour, showing 'everything that the whole population uses, under the present technical conditions in an industrialized country' (Neurath 1939: 146). The different boxes contain pictograms displaying the number of people in each group and their occupation. One can read and compare the proportion of workers for each occupation and make connections between uses of resources, notably their quantity and distribution across the different levels. For Neurath this affords a 'bird's eye view of the interconnections between all parts of a society in action […]' (Neurath 1939: 65), facilitating analysis of the state of the world or of a country.

Reading 'Economic Scheme' comprises a network of 'visual arguments' (in Nemeth and Stadler 1996: 292) that require familiarity with the protocol of

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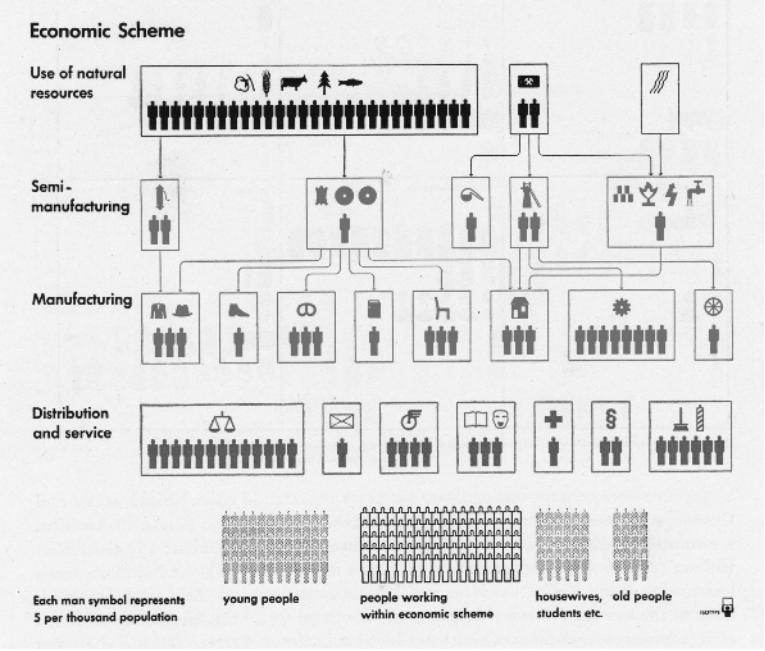

Figure 4: Economic Scheme. *Modern Man in the Making,* 1939, p. 65, Otto and Marie Neurath Isotype Collection, University of Reading.

equivalences between quantity and symbol so that readers can perform quantitative comparisons, draw conclusions, and formulate questions or further discussion. With Isotype, Neurath is promoting a graphical approach that encourages the development of argumentative capacities based on a predefined reading protocol.

Elisabeth Nemeth asserts that the work of decipherment entailed by reading these pictograms supposes a liberation of the imagination (Nemeth 2011: 73), but this form of imagining implies both discovering meanings and establishing their content. Quite different from Benjamin's 'untidy child', whose playful and mobile position upsets the order of things, this position is at once spatial, epistemological and political. For the imaginative, there is always an aspect of '*jeter en l'air les lettres du discours, dispenser joyeusement les balises de la doctrine préexistante, puis tout reprendre de A à Z*' (Didi-Huberman 2009: 239).[7]

Although the 'geographical games' in the *Autobiography* are indicative of how a proliferation of associations allows for a visual experience that exceeds the Isotype way of seeing, the position of the child that Neurath chooses in the text is, in the main, that of a child in control of what he sees. What he sees is a source of neither confusion nor perturbation. For instance, when

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Neurath visits Vienna's *Kunsthistorisches Museum* and is impressed by copies of Egyptian tomb murals,

> I could see what the men and women were doing without being troubled by vague backgrounds and obscure corners. Everything was simple, easily perceptible and told its story clearly. What the little hieroglyphic signs added, I neither knew nor even cared very much, I must confess. What pleased me was that the drawings did not baffle me.
>
> (Neurath 2010: 70)

We see here a desire to restrict visual experience to the nonconflictive 'informative character' (Neurath 2010: 72) of the visible world. As a child he enjoyed reading figures in inkblots on folded paper and in hand shadows, a modality of seeing concerned less with formless stains than with welldefined contours: 'I think my liking for both hieroglyphs and shadows on the wall led me gradually to enjoy silhouettes […] A silhouette forces us to look at essential details and sharp lines; there are no vague backgrounds or superfluities' (Neurath 2010: 93).

The child's blotreading game led to the adult Neurath's reinforcement of these figures and outlines as his 'forms' of reasoning. Neurath's visual education plan entails a commitment to single outline forms, and further on he will claim: 'children are mainly interested in the clear visualization of something' (Neurath 2010: 49).

Yet the project of seeing only what it is necessary to see, eliminating 'superfluous' details, does not prevent him from commenting on those moments when the enigmatic detail does catch his attention. Here is his boyhood impression of Brueghel's *The Conversion of Saint Paul* in the museum's galleries: 'I was always struck by the soldier in the foreground who is walking along looking very tired, carrying his helmet and some of his armour, just like a woman carrying her shopping-basket' (Neurath 2010: 76).

The fortuitous detail attracting his gaze offers an indication of how the effect of the detail, loaded with potential significance, is already an act of the child's nonsubmission to a clear-cut visualization of things. In this short passage, a position can be glimpsed that is not that of the child who identifies and renders legible what he sees, but rather a mobile position: the child's gaze drifts around, settling on the inessential and the enigmatic, without shutting it in place once and for all.

The authority of the line

By Neurath's reckoning, knowledge should be used in the context of visual education '[…] only for indicating a more or less connected group of statements

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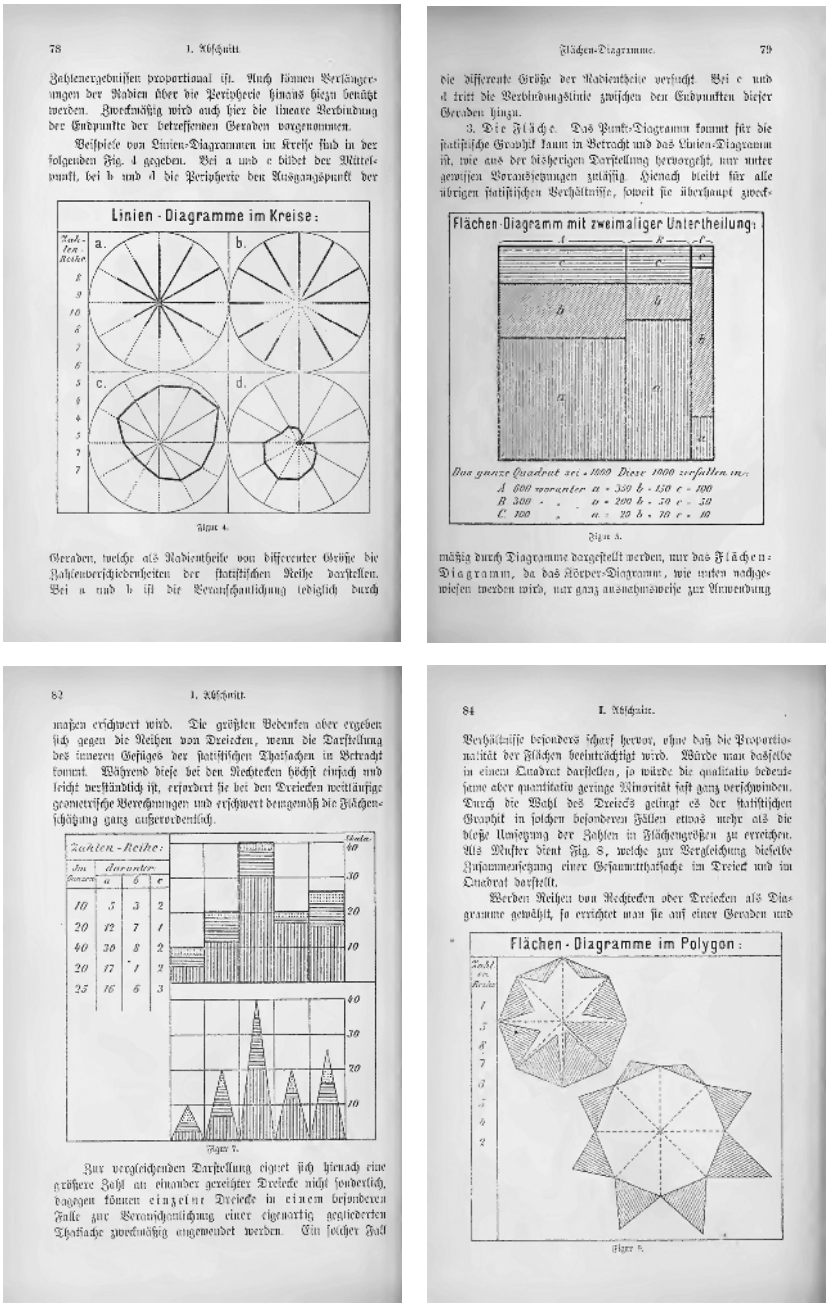

78 I. Abschnitt

Zahlenergebnissen proportional ist. Auch können Verlängerungen der Radien über die Peripherie hinaus hiezu benützt werden. Zweckmäßig wird auch hier die lineare Verbindung der Endpunkte der betreffenden Geraden vorgenommen.

Beispiele von Linien-Diagrammen im Kreise sind in der folgenden Fig. 4 gegeben. Bei a und c bildet der Mittelpunkt, bei b und d die Peripherie den Ausgangspunkt der

Linien-Diagramme im Kreise:

Figur 4.

Geraden, welche als Radientheile von differenter Größe die Zahlenverschiedenheiten der statistischen Reihe darstellen. Bei a und b ist die Veranschaulichung lediglich durch

Flächen-Diagramme. 79

die differente Größe der Radientheile versucht. Bei c und d tritt die Verbindungslinie zwischen den Endpunkten dieser Geraden hinzu.

3. Die Fläche. Das Punkt-Diagramm kommt für die statistische Graphik kaum in Betracht und das Linien-Diagramm ist, wie aus der bisherigen Darstellung hervorgeht, nur unter gewissen Voraussetzungen zulässig. Hienach bleibt für alle übrigen statistischen Verhältnisse, soweit sie überhaupt zweck-

Flächen-Diagramm mit zweimaliger Untertheilung:

Figur 5.

mäßig durch Diagramme dargestellt werden, nur das Flächen-Diagramm, da das Körper-Diagramm, wie unten nachgewiesen werden wird, nur ganz ausnahmsweise zur Anwendung

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maßen erschwert wird. Die größten Bedenken aber ergeben sich gegen die Reihen von Dreiecken, wenn die Darstellung des inneren Gefüges der statistischen Thatsachen in Betracht kommt. Während diese bei den Rechtecken höchst einfach und leicht verständlich ist, erfordert sie bei den Dreiecken weitläufige geometrische Berechnungen und erschwert demgemäß die Flächenschätzung ganz außerordentlich.

Zahlen-Reihe:

Im Ganzen	darunter a	b	c
10	5	3	2
20	12	7	1
40	30	8	2
20	17	1	2
25	16	6	3

Figur 7.

Zur vergleichenden Darstellung eignet sich hienach eine größere Zahl an einander gereihter Dreiecke nicht sonderlich, dagegen können einzelne Dreiecke in einem besonderen Falle zur Veranschaulichung einer eigenartig gegliederten Thatsache zweckmäßig angewendet werden. Ein solcher Fall

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Verhältnisse besonders scharf hervor, ohne daß die Proportionalität der Flächen beeinträchtigt wird. Würde man dasselbe in einem Quadrat darstellen, so würde die qualitativ bedeutsame aber quantitativ geringe Minorität fast ganz verschwinden. Durch die Wahl des Dreiecks gelingt es der statistischen Graphik in solchen besonderen Fällen etwas mehr als die bloße Umsetzung der Zahlen in Flächengrößen zu erreichen. Als Muster dient Fig. 8, welche zur Vergleichung dieselbe Zusammensetzung einer Gesammtthatsache im Dreieck und im Quadrat darstellt.

Werden Reihen von Rechtecken oder Dreiecken als Diagramme gewählt, so ordnet man sie auf einer Geraden und

Flächen-Diagramme im Polygon:

Figur 9.

Figure 5: Pages 78, 79, 82 and 84 from Georg von Mayr, *Die Gesetzmässigkeit im Gesellschaftsleben, statistische Studien*, München: Oldenbourg, 1877 (electronic resource), http://archive.org/details/diegesetzmssi00mayr Free eBook from the Internet Archive http://www.openlibrary.org/books/OL24237960M.

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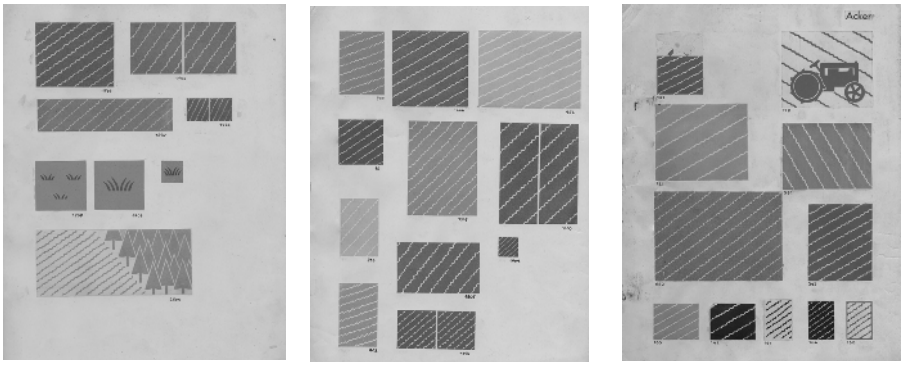

Figure 6: Textures for 'field' or 'land' from the *Isotype Picture Dictionary*, I.C. 4/3, Otto and Marie Neurath Isotype Collection, University of Reading.

and arguments of a factual kind' (in Nemeth and Stadler 1996: 255).[8] Seeing is restricted to knowing how to translate factual statements, namely statistical information, into arguments. Because factual knowledge is common to all human beings, Neurath maintains, its transmission and communication must be possible. Here, then, resides the political project of this language: to offer the common man unambiguous statements in Isotype language so that discussion, opinion making and transformation of reality become possible.

The search for a common language of communication took root in nineteenth-century Europe (Figure 5), where statistical forms had already reorganized an experience of seeing and understanding materials, aligned with the aspiration to an objective viewpoint that would picture implicit order in social, urban and natural phenomena (Palsky 1996; Guzmán-Verri 2010, 2013). Furthermore, statistical facts enhanced democratic systems in their demand for fairness and impartiality, quantification lending political decisions the impression of being impersonal (Poovey 1998; Porter 1995).

By the time Neurath theorized the *Visual Representation of Architectural Problems* (Neurath 1937) he had already been promoting a regime of line and texture over surfaces and defined contours as a means of translating statistics for social and urban phenomena into readily legible order (Figure 6). This consisted of a visual organization of the various elements of city planning (photographs, graphics, models, cartoons, etc.) into 'an informative whole' or 'coordinated scheme' (Neurath 1937: 58) so that possible correlations of factors could be rendered visible to each individual, whether layman or specialist.[9] The visual representation of architectural problems went on to become a new chapter in the Isotype encyclopaedia.

The typographical aspect of this modality of seeing is especially noteworthy. In the context of incunabula and a new form of advanced visual reasoning, Renzo Baldasso highlights how the authority of the printed line on the page created an

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accurate typography that 'guarantee[d] the epistemological soundness of visual arguments' (Baldasso 2007: 280). The plates of Ptlolemy's 1478 *Cosmographia* attest to this: with their precise lines based on a set of coordinates calculated from terrestrial and celestial data, typographic choices and clear labelling create a graphic, mathematical abstraction, absent from previous manuscripts.

Neurath commits to a precise typography, to the lineal, flat and diagrammatic qualities of representation, as though graphical precision were equated with precise communication,[10] in apparent disregard for the kind of disruption of the authority of line effected years earlier by the likes of Max Ernst in the collages of *La femme 100 têtes* (Ernst 1929), where details exceed or burst into a clear visualization, creating conflict and using line against itself.

An education in citizenship

In the *Autobiography,* Neurath presents visual experience first and foremost as an experience that 'takes sides', that is, as constituting a programme. By providing information and promoting consensus, the Isotype pictograms can strengthen democratic systems. Visual communication is deemed to bridge gaps and reduce antagonism, contributing to 'the creation of a brotherhood of man' (Neurath 2010: 8) in which '[…] a certain store of factual knowledge is common to all, and it may be transferred in as neutral a manner as possible' (in Nemeth and Stadler 1996: 250).

This taking sides in favour of visualization of information, communication and democratic progress is being updated in today's 'information age' and 'information society'. These slippery terms give emphasis to different phenomena (Webster 2006: 8–31), treated by ongoing debates on the manipulation of information, from the emergence of public opinion management (Bernays 1955) to the dynamics of the media apparatus and its supposed role as guardian of public interest (Curran 2002). Following Mario Perniola, this 'taking sides', linked to the communicative capacity of language as purposed to the enhancement of democratic systems has lost its efficacy: '*Di tutte le mistificazioni della comunicazione indubbiamente la più grande è stata quella di presentarsi sotto le insegne del progressismo democratico, mentre constituisce la configurazione compiuta dell'oscurantismo populistico*' (Perniola 2004: 6).[11]

What was intended to be a space of discussion – as understood in Jürgen Habermas's notion of public sphere where the forming of public opinion was via rational debate – has become a chaotic accumulation of voices. Contents have dissolved in the face of excessive and uncontrolled exposure of every variable of a message. Yet Neurath's project is still in part active, at least in the field of architecture.[12]

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According to Win Jansen, revisions of the Isotype system have occurred mainly in the fields of art and design, while it has virtually disappeared in statistical domains (Jansen 2009). Traces of the project's educational dimension for the architectural field can be found in the 2006 Venice Architecture Biennale *Cities, Architecture and Society*, devoted chiefly to presenting statistical maps and graphs showing differential aspects of cities: proportions of young and old, literacy rates, GDP, energy consumption, CO_2 emission, etc. It was assumed that visitors would connect the different aspects of the information, drawing their own conclusions. Conditions of seeing, reading and learning are here restricted to a didactic chain of infographics, limiting the relationship between knowledge (the complexity of cities and societies) and form (graphics) to a programmed discourse.[13]

Other contemporary projects highlight bonds between people, city, digital information technologies and big data, associated within network (Ratti et al. 2013), organic (Ratti 2011) and democratic models (Nabian and Ratti 2012). Senseable City Laboratory (SCL) asserts the possibility of creating 'info-scapes' (in Nabian and Robinson 2011: 20) made from digital traces left by Internet users: for example, documentation of cell-phone activity during massive urban events (e.g. concerts) reveals areas of traffic congestion, numbers of people leaving the area, actual transport demand and so forth (Vaccari et al. 2010).

> […] these infoscapes provide citizens with a better knowledge of their environment, and allow them to make more informed decisions. Indeed, this seems to be the most promising characteristic of the future, which becomes 'smart' through the collaborative activity of the sentient, selfreporting agents who are its citizens. It will be a desirable place to live and work, since it offers a platform for reinforcing identity and culture through collaboration.
>
> (Nabian and Robinson 2011:20).

For SCL, cities can come to operate as 'realtime control systems' (Nabian and Robinson 2011: 8) where the visualization of information becomes a continuous mapping of use patterns.[14] Urban complexity is reduced to the efficacy of information and its forms of visualization, which are supposed to be understood 'intuitively' by the community at large (Claudel et al. 2016). Info-scape becomes a new 'visual consciousness' of this 'intuitive' way of seeing. Though this is merely a preliminary consideration of info-scape, one cannot but ask: is this not a categorical *taking sides*?

A tentative answer can be found by counterpoising to this the work of Harun Farocki. In the video installation *Deep Play* (2007), twelve projections show simultaneously the final match of the 2006 World Cup. The images of the match come with graphs analysing the movement of each player, the speed and trajectory of

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the ball and the positions of the footballers. Their movements during the match and across the space of the field become information that is meticulously rendered in graphic form. This visual material, obtained from FIFA (Farocki 2009: 237), is supposed to be synonymous with analysis, calculation and decisionmaking, and as such becomes a way of conceiving, organizing and directing the event, yet in the installation the info-scapes are stripped of their managerial tasks: the graphs are on the screen, but not the managerial imperative implied in them. With the images now devoid of their implicit function, the viewer has to relearn how to see them; she is solicited anew in her capacity to articulate images with images, with sounds and with texts.[15]

At a time when architects insist on explicitly inserting themselves into pseudo-democratic discourses, what can be unlearned in architecture from a text like Neurath's *Visual Autobiography*? The attempt to create a lesson for learning to see, to create an 'eyeconsciousness', is in tension with the playful position of the child who cuts through and across the order of things, repositioning herself into a situation of not knowing, where the visual material (her visual memories or assemblages) will not be turned into illustrated politics.

Acknowledgements

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NOTES

1. For an overview on Benjamin's insights on childhood in the context of its revolutionary power, see Salzani 2009. For a more general view, see Buck-Morss 1997: 262–86). A 1929 radio talk on children's literature suggests that Benjamin was aware of Neurath's pictograms:

> The extraordinary timeliness that all attempts to develop instruction based on visualization possess stems from the fact that a new, standardized, and wordless system of symbols seems to be arising in very different areas of life – in traffic, art, statistics. Here, a pedagogical problem touches upon a wide-sweeping cultural one, which could be expressed with the slogan: For the symbol, against the word!
> (Benjamin 2014: 253)

2. This study does not seek to offer insight into Neurath's life – the person 'Neurath' and the 'autobiographical I' do not necessarily coincide (Smith and Watson 2002: 49–81) – nor does it explicate his visual project in detail. On the life of Neurath, see Neurath and Cohen (1973: 1–83); Nemeth and Stadler (1996: 15–28); Cartwright et al. (1996: 1–82); Neurath and Kinross (2009); Sandner (2015). On Isotype, see Twyman (1975); Kinross (1979); Lupton (1986); Leonard (1999); Hartmann and Bauer (2006); Krampen et al. (2007); Annink and Bruisma (2008); Lee (2008); Neurath and Kinross (2009); Nemeth (2011); Hochhäusl (2011); Tsiambaos (2012).
3. Isotype translates social and economic statistical data into pictograms or 'numberfact pictures' to be made public through museum exhibitions and printed media (Kraeutler 2008; Vossoughian 2008; Neurath and Kinross 2009; Burke et al. 2013).
4. '[…] the pedagogy of reading – is on a par […] with the pedagogy of images – is itself a battlefield on which there is an encounter between forces of enslavement and forces of liberation, between moral constraints and playful *agencement*, between lessons in a sequenced chain and unchained playfulness'. All translations of this text to English are my own. The term *agencement* has been left in French in reference to Deleuze and Guattari.
5. For the crucial distinction between imagination and sheer fantasy, see Buck-Morss (1997: 256–62) and Didi-Huberman (2009: 254–56).
6. Such as stamp collections, stencils, small publicity images, chemical experiments, the 'shinies' young Neurath sticks into his scrapbook, as well as his toy woodblocks and cardboard figures with changeable clothes (Neurath 2010: 13).
7. An aspect of 'throwing the letters of discourse up in the air and joyfully breaking apart the codes of preexisting doctrine so as to resume from A to Z'. All translations of this text to English are my own.
8. Neurath was a member of the Vienna Circle, whose project had its theoretical bases in empiricism, positivism and the logical analysis of language.
9. For the episode NeurathCIAM, see Nemeth and Stadler (1996: 167–82); Blau 2006; Vossoughian 2006; Hochhäusl 2011: 95–113).

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10. This is emphasized over and again in the *Autobiography*, when he refers not only to scientific texts, such as René Descartes' *Optics* or Thomas Henry Huxley's *Physiography*, but also to the illustrations of Aubrey Beardsley and the vignettes of Wilhem Busch.
11. 'Of all the mystifications of communication, the major one was without doubt to present itself under the banner of democratic progressivism, when in reality it constitutes the outmoded configuration of populist obscurantism'. All translations of this text to English are my own.
12. A number of institutions in England, the Netherlands and Austria are working with Isotype. For a list of publications and exhibition projects, see http://isotyperevisited.org/; http://www.stroom.nl/webdossiers/webdossier.php?wd_id=2615745; http://www.zeitlosezeichen.at/timelesssigns.html. Accessed 28 September 2015.
13. A number of publications in architecture stand as representatives of a renewed interest in statistical data and its forms of representation (Burdett and Sudjic 2008; Maas 1999; Chung et al. 2002, amongst others).
14. Answers are still pending to fundamental questions such as: is the information produced by an Internet user conceptually the same as the participation of a citizen? Does information boost identity? Following Agamben's discussion on biometric data, what seems to be favored is 'identity without person' (Agamben 2011: 67–78).
15. As Farocki suggests: '[…] when you turn photographs or other still images into something, you don't compete with the omnipresent narrative machine. When you show a boy who starts talking to a girl at a coffee shop, you are immediately subjected to standards: does it look like Neighbourhood TV, like an independent film or like the work of a student? When it's about putting stills into a sequence, to read them, a new kind of competence arises' (Hüser 2004: 313).

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