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DESIGN RESEARCH AS A GESTURE OF SHOWING

To interpret design as a gesture of "showing" seems an obvious approach, because design always has to operate in the realm of the perceptible if it is to have an impact. Above and beyond this, the act of "showing" is also of elemental significance in practice-based design research because its knowledge is founded on the act of showing things, not in making verbal assertions.

If we approach design research as an aesthetic practice from an epistemological perspective, first we have to ask *how* the artefacts of this practice are made. I should here first like to describe design research as a media practice, and focus on the act of showing in order to tease out a mediality of design. In this regard, I shall take a closer look at modes of representing knowledge and concomitant modes of communication. To illustrate this, I shall discuss a design-research project from the Department of Design at the Zurich University of the Arts (ZHdK).

EPISTEMOLOGIES OF PRACTICE-BASED DESIGN RESEARCH

In all kinds of situations, design as practice and artefact specifically refers to the wishes of those who commission it, use it and design it, endeavouring to implement their intentions. Design can thus be defined as a practice that desires to solve problems and to transfer states of being from the unintentional to the intentional. New forms of experience also always emerge—whether in the alphabetical ordering of names in telephone books as opposed to grouping them by topic, the development of a pocket knife with its different tools, or smartwatches that enable a new perception of our fitness. In the case of design in general and likewise design research, two aspects are crucial: a goal or object that is the *what* of our engagement with design, and the manner of our practical engagement with it through the medium of design, namely the *how*.

Gestures of showing are a means of providing proof but, with very few exceptions, this is impossible in the field of design. The knowledge generated by practice-based design research has a different quality from knowledge

See Herbert Simon, *Sciences of the Artificial* (Cambridge, MA: MIT Press, 1969), 111.

Pierre Smolarski, e-mail correspondence, November 28, 2019.

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generated by discursive statements. Since aesthetic practices operate in the singular, their results cannot be generalised, and this is also the source of their epistemological specificity: their singular practice opens up experiential spaces of the singular. ⧗ Their epistemological potential lies not solely in aesthetic depiction, but in making singularity visible through practice. In contrast to empirical, discursive research methods, design research is non-linear and explorative, cannot be based on hypotheses, and its goals can change during the act of research. In this regard, Dieter Mersch has aptly remarked that research in the arts is an act of "searching," not "re-search" in the sense of something that is repeatable. ☺ However, the expansion of the concept of knowledge to include the non-propositional did not encompass any explicit expansion of the concept of research in order to investigate an object through the practice of design. ⧗ Nevertheless, I shall still use the term "practice-based design research" here.

SHOWING WITH DESIGN

Fundamentally, we can differentiate between aisthetic and discursive media. Images and sound are *aisthetic,* words and numbers discursive. *Images and sounds show, words and numbers tell.* ⧖ Showing possesses a logic and a structure different from that of telling and of discursive schemes; it demonstrates but can never define. ⧗

In terms of media theory, gestures of showing possess two characteristics. First, there is the act of demonstrating *(deixis),* which is like an arrow pointing from oneself to an object, and must always be visible in order to show anything. Secondly, there is ostension (the act of pointing out or exhibiting) that shows something through itself and depicts an illustrative sample. ⧗ An aesthetic appearance is never true or false in itself; instead, it reveals or conceals perspectives on the world. However, aesthetic products (including pictures) must always refer affirmatively to the object. ⧗ In other words, the object cannot be described without reference to it. These processes can be described from a semiotic per-

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⧗ Dieter Mersch, "Was heißt, im Ästhetischen Forschen?" (unpublished manuscript 2013), 13, accessed April 23, 2018, http://dieter-mersch.de/.cm4all/iproc.php/Ästhetik%20Kunstphilosophie/Mersch_Was%20heisst%20im%20Aesthetischen%20forschen_2015.pdf?cdp=a.

⧗ See Dieter Mersch, "Art, Knowledge, and Reflexivity," *Artnodes* 20 (2017): 33–38.
⧗ Pierre Smolarski, e-mail correspondence, November 28, 2019.

⧗ Dieter Mersch, "Medialität und Undarstellbarkeit," in *Performativität und Medialität,* ed. Sybille Krämer (Paderborn: Wilhelm Fink Verlag, 2004), 84.
⧗ Ibid., 84–85.

⧗ See Martina Hessler and Dieter Mersch, eds., *Logik des Bildlichen: Zur Kritik der ikonischen Vernunft* (Bielefeld: transcript, 2009), 20–21.
⧗ Dieter Mersch, "Medialität und Undarstellbarkeit," 86.

spective, and I shall explore this further with regard to the abovementioned project. However, the perceptibility of aisthetic media can never be reduced solely to their symbolic value. ⧖ We also have to bear in mind the materiality of the sign, its mediality and performance in time. ⧖ "Showing" thus goes beyond the intentional, *deictic*, pointing gesture of the designer, and is in itself an event. What this "eventfulness" has to do with showing can be explained by means of the following quotation from Dieter Mersch, which originally referred to art:

⧖   See Fabian Goppels-röder and Martin Beck, eds., *Sichtbarkeiten 2: Präsentifi-zieren—Zeigen zwischen Körper, Bild und Sprache* (Zurich: Diaphanes, 2014), 7.
⧖   See Dieter Mersch, *Was sich zeigt: Materialität, Präsenz, Ereignis* (Paderborn: Wilhelm Fink Verlag, 2002), 9.

" The medium writes, it 'translates' in the sense of *meta-phora*; it gives structure to what is open, it configures scenes—but it does not bring forth what is open: this emerges, showing itself as an event." ⧖

This act of "showing itself" is a performative event that takes place during the observation of the mediality of a medium, and in its mediatised state during its absence. ⧖ This event also takes place at the moment of practice-based research; the researcher works towards this and must reconsider issues of meaningfulness and appropriateness anew each time.

⧖   See Mersch, "Mediali-tät und Undarstellbarkeit," 89 (translated from German).
⧖   Ibid., 81.

If design is understood as being an aesthetic bearer of knowledge, then the design sketch—containing a depiction of the representational form or the artefact—is a conduit for us to look, as it were, at the researcher's knowledge on a topic and also on the eventfulness and openness of aisthetic phenomena. The design artefact is a medium, but most of all it is a means of research. The sketch refers to bodies of knowledge, and at the moment that research is being carried out, it is of particular significance to the researcher, being an associative, reflective surface of the object. The mediating momentum of practice exists here, but has not yet been concluded. The design artefact thereby becomes a bearer of twofold knowledge: with regard both to the object being observed (the *what*), and to the knowledge of its own manufacture that has flowed into its concrete state of being (the *how* through which we refer to it).

This momentum is also found in empirical research processes in the natural sciences, when an object is co-created or even wholly construct-

⟨ See Hans-Jörg Rheinberger, *Experimentalsysteme und epistemische Dinge: Eine Geschichte der Proteinsynthese im Reagenzglas* (Göttingen: Wallstein Verlag, 2001), 8.

Ludwig Fleck, *Entstehung und Entwicklung einer wissenschaftlichen Tatsache: Einführung in die Lehre vom Denkstil und Denkkollektiv* (Basel: Benno Schwabe, 1935).

Bruno Latour and Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts* (Princeton: Princeton University Press, 1979); Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2005).

Karin Knorr-Cetina, *Die Fabrikation von Erkenntnis: Zur Anthropologie der Naturwissenschaft* (Frankfurt a. M.: Suhrkamp Verlag, 1984).

See Sybille Krämer, "Das Medium als Spur und Apparat," in *Medien Computer Realität: Wirklichkeitsvorstellungen und Neue Medien,* ed. Sybille Krämer (Frankfurt a. M.: Suhrkamp Verlag, 1998), 79.

ed through the research conducted into it and through the means of that research. This has already been remarked upon by Hans-Jörg Rheinberger, ⟨ and before him by Ludwig Fleck, Bruno Latour, Steve Woolgar ⟩ and Karin Knorr-Cetina. However, the experienceable "meaning" in the artefact is not in itself lost through the editing stages of design; instead, it is actually created by them. On a practical level, this can occur, for example, via graphic emphases and by creating orderings that refer visually to the researcher's level of knowledge and can trigger new questions by means of reflection. When the artefact is observed by outsiders, it also reveals itself as a referential object for the knowledge of the researcher. In this sense, all media depictions are merely references to outside knowledge. In its openness to interpretation, the mediality of the artefact always culminates in an excess of meaning, and it "says" more than is actually intended.

PRACTICES OF MEDIA
REFERENCE
In order to take a closer look at the modes of communication of a design object, we shall here investigate a research project from the field of visual communication, as this field is especially concerned with issues of visualisation. This project was a bachelor thesis by Dorian Delnon and Silvan Possa entitled "Radical Speed Software: Eine Untersuchung politischer Meinungsbildung im World Wide Web" ("[…] an investigation of political opinion-forming in the World Wide Web").

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This project looked at the filter bubbles, polarisation and monopolisation of political content on the Facebook social network, and endeavoured to discover how they might be visualised based on examples. To this end, the two students designed a systematic, structured, experimental set-up (which they also described as such) in the form of a book in which they assessed algorithmic tendencies in reference to user behaviour. As their starting point, they created two profiles that collected all politically relevant posts on a database over the course of a month. At the be-

ginning, they created a map across the political spectrum of opinion journalism, dividing it into "centre-left" and "right"; they then made ten "likes" on the webpages of the most relevant media, which triggered the algorithms. The posts they were then recommended were archived in a database along with their metadata. One fundamental decision they made when deciding on the layout of their data was to always place the posts recommended to Profile 1 on the left-hand pages of the book, and those of Profile 2 on the right-hand side. They explained the rules-based procedures of their research in the introductory chapter to their book (ranging from their data-gathering to their subsequent visualisation of the data); this was the epistemological aspect of their experimental design.

FIG.1
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This publication was divided into three sections. It begins with an archive that documents all the posts captured during the period of observation. This is followed by an evaluation of those posts, and then, at the end, by their interpretation. This division was an attempt to reveal the logic of the Facebook algorithms and their means of reference (such as listing suggestions for "likes") and to depict related items; their aim was to be able to make assertions about their characteristics in the subsequent sections of the book in which their data were evaluated and interpreted. This project was programmatic in nature, and its design was largely rule-based. In a personal conversation, Silvan Possa explained to me that this was because they wanted to achieve a stringent visualisation of the work of the algorithms. They were concerned with devising a software that could use design methods to visualise the impact of the algorithms. To this end, the two students created "layout scripts" for arranging the data in book form, after they had finished manually gathering their data. The draft stage for the publication layout had an impact on the data gathering, as it made visible relevant, though as yet absent, parameters. ☼ They used a Baroque Antiqua typeface to create a seemingly neutral layout; they only used two font sizes per section of the book. Possa said that it was important to

☼   Conversation with Silvan Possa, Zurich, October 11, 2019.

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FIG.1   Cover of the publication "Radical Speed Software."
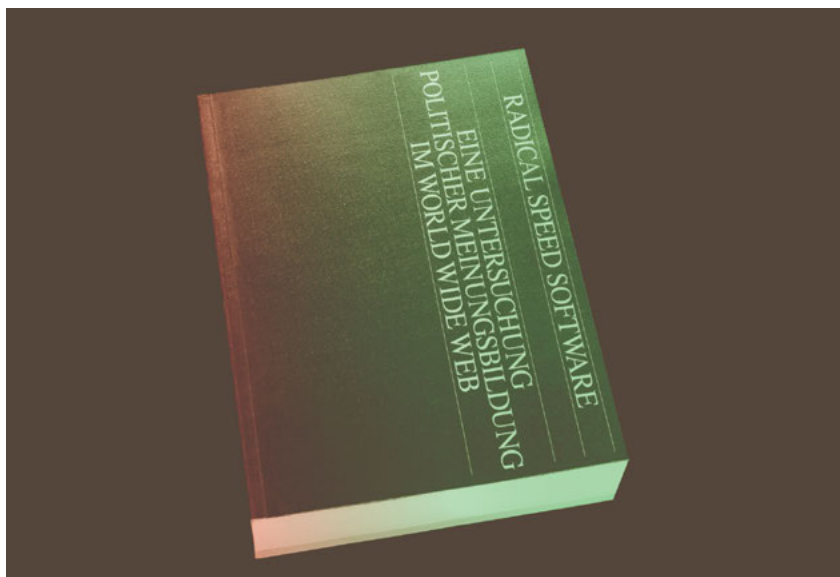
adopt a typographically low-key approach be-cause the use of more expressive typefaces would have mitigated their chosen approach. ⫘

EXEMPLIFICATION AND DENOTATION

In his pragmatic theory of symbols, Nelson Goodman rejected iconic similarity as a criterion for accuracy of depiction, instead foregrounding the manner of relationship between the object and the sign. ⫘ Representation thus takes place via reference, not via similarity. Ulrike Felsing has written about this as follows in *Das Buch als Hypertext* (The book as hypertext):

" Goodman's core actions of 'symbolising' and 'referring' denote the pictorial rep-resentation that he differentiates from verbal, non-representational description.[*] According to Goodman, the relationship between the image and the object it depicts is not based on similarity but on their referential relationship. Similarity is not the basis of this relationship, but is merely one possible factor, not a determining factor. "

Using the concept of "exemplification," one can use this model to analyse abstract works of art or even artefacts in design research. To this end, Goodman uses concepts of referential relation-ships: denotation and exemplification, but also allusion, which can also occur in combination with individual elements. Denotation in imagery corresponds to a direct depiction of a linguistic sign. In other words: it is a means of saying some-thing by showing.

"Showing by telling" would essentially correspond to a discursive attempt to describe an image. However, the pictorial or the aesthetic cannot be completely subsumed into the discur-sive. ⫘ Saying and showing are not mutually exclusive. In the work of Sybille Krämer ⫘ or Phillipp Stoellger, ⫘ for example, they are in-stead regarded as two ends of a scale. In exem-plifying references, only individual qualities of the object are referred to; other characteristics do not necessarily have to be listed—such as its weight or its true-to-scale format, if applicable. Exemplification is thus selective and represents only a sample. In the examples given above, the publication can be understood as a form of ex-emplification (carried out by the typographical layout) of the operations completed by the al-

⫘   Ibid.

⫘   Nelson Goodman, *Sprachen der Kunst* (Frankfurt a. M.: Suhrkamp Verlag, 1997).

⫘   Ulrike Felsing, "Das Buch als Hypertext: Zur medialen Prägung von Bild-konstellationen," *kunsttexte.de* 3 (2016): 1–13 (translated from German).
[*]   Felsing refers here to Nelson Goodman, *Spra-chen der Kunst* (Frankfurt a. M.: Suhrkamp Verlag, 1997), 16.

⫘   See Ludwig Wittgen-stein, *Tractatus logico-philoso-phicus: Logisch-philosophische Abhand-lung* (Frankfurt a.M.: Suhrkamp Verlag, 1963), 4.1212.
⫘   Sybille Krämer, "Operative Bildlichkeit: Von der 'Grammatologie' zu einer 'Diagrammatologie'? Reflexionen über erkennendes 'Sehen,'" in *Logik des Bild-lichen: Zur Kritik der ikonischen Ver-nunft*, eds. Martina Hessler and Dieter Mersch (Bielefeld: transcript, 2009), 94–122.

⟦≋⟧   Phillipp Stoellger, "Sagen und Zeigen: Komplikationen und Explikationen einer Leitdifferenz," in *Sichtbarkeiten 2: Präsentifizieren: Zeigen zwischen Körper, Bild und Sprache,* eds. Fabian Goppelsröder and Martin Beck (Zurich: Diaphanes, 2014), 71–92.

FIG.2
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⟦≋⟧   Conversiation with Silvan Possa, Zurich, October 11, 2019.

FIG.3
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gorithm. If a word was in italics in the original post, and it is then also placed in italics in the layout, then this represents an exemplified reference. Only through the design do hitherto invisible relations become visible. With this aesthetic form of depiction, we acquire a new, individual form of knowledge about the object.

The layout and typeface are not oriented towards the graphic appearance of the social media, but instead endeavour to depict the posts recommended by the algorithm and place them in a larger context. To this end, the content gathered is categorised and newly ordered in lists, tables and compact text blocks. ⟦≋⟧ The relationships depicted in the lists are indexical: in other words they have a factual quality, and their graphic depiction can never be the sole "correct" version. However, providing summarising lists of datasets of equal value enables us to have more stable access to them.

This approach allows us to discern connections that would otherwise only be recognisable indirectly, on browser screens or in the programme language used. Research design practice would ask questions here about the depiction and referencing of data in the medium of the book.

With reference to our research approach, we nevertheless find dramaturgical decisions, as when image sequences in the interpretative section are ordered not chronologically, but in a series in which the contents are presented so that they become increasingly extreme. This operation can be assessed in different ways. In the context of the established scheme, this is a minor inconsequential matter within a chronology that remains otherwise valid. But when we consider the radicalisation of the contents shown that has already been undertaken by the Facebook algorithm, it is all the more serious. All the same, every image is given a time-stamp that allows us to reconstruct the actual chronology.

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SPATIALISATION AND DIAGRAMMATICS
Knowledge can always only be stored in specific structures, and is thus always already preconfigured by its carrier and by the semantics that
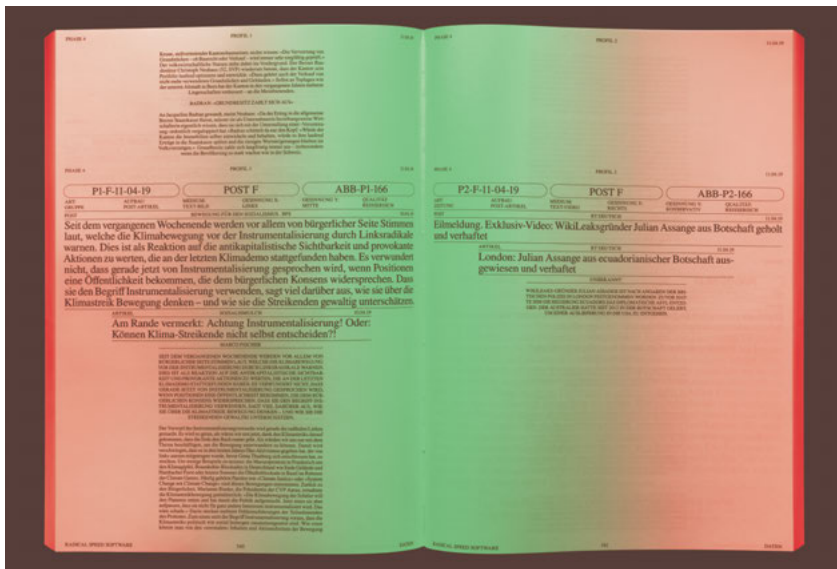
FIG.2   The graphic design does not refer to the social medium as such, but rather exemplifies the relations we have ascertained in it. To this end, an additional referential system has to be established.

FIG.3   The black, circular forms used to codify each post refer to the buttons often used on social-media sites. This corresponds to a combination of exemplification and allusion as in Goodman's semiotic model.
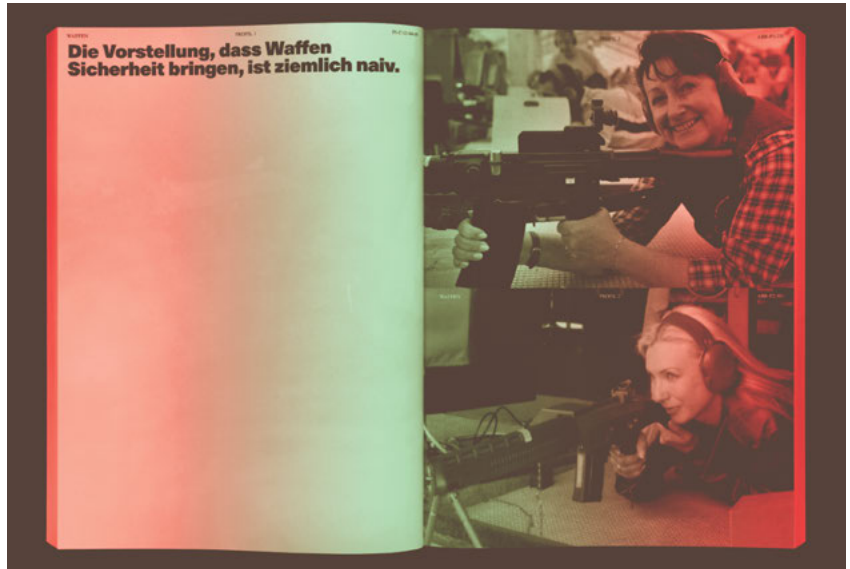
FIG.4   All the illustrated posts, whether photos or graphics, are given in black-and-white (even though they were originally published in colour) and with a homogenising ras-terisation of the image. The original proportions of the images have also been altered. This method of reproduction corresponds to an exemplification of the original contrast and motif of the image, but not of its colour or its format.

FIG.5   In the "evaluation" chapter, the posts are situated within a system of coordinates according to a diagrammatic approach: the x-axis shows "left," "centre," "right," while the y-axis shows "conservative," "centre," "liberal."
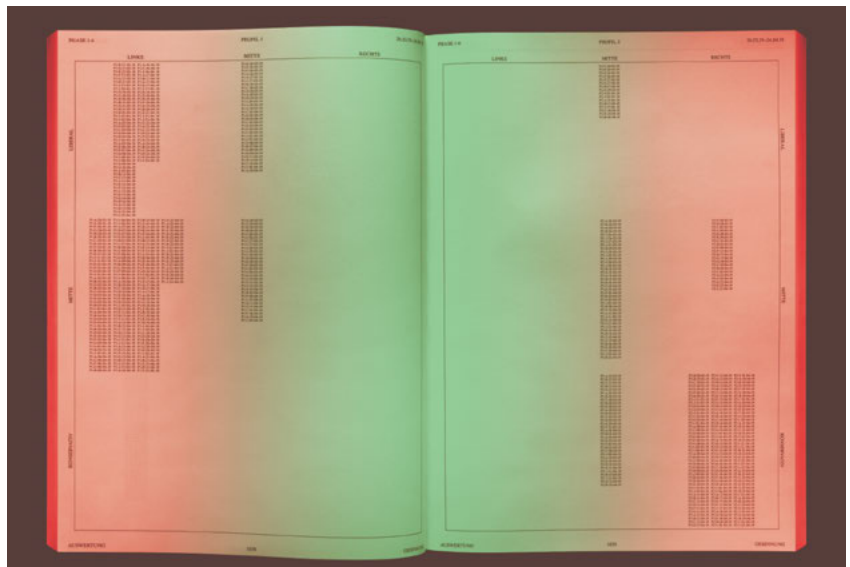
can be depicted by it. For example, the format of paper is decisive for the volume of information that can be read with ease on it. Thus every act of research is codetermined not just by its methodology but also, always, by the media in which it is recorded. In this case, the medium is a book that is defined by its format and by the fact that it can be opened and closed. Both these qualities raise questions of spatialisation with regard to the information depicted in the medium. Without a medial space, no communication of the content can take place, because the prerequisite for this is the visibility of a specific plane. �

The publication we are examining is based on the parallel arrangement of two social-media profiles. Only when all recommendations for both profiles have been shown for a specific point in time does the next entry begin. This juxtaposition of the two contrasting profiles is an important aspect of specificity in the project. It can be seen as a practical means of differentiation within the object, because the whole spectrum of content recommended by the algorithm for each profile is to be depicted and confronted here. This creates a rhythm that is especially visible in Fig. 5. And the mediality of the medium is determined by this juxtaposition to a fundamental degree. Juxtaposing the texts and topics of one profile with the images of the other, as is especially the case in the interpretative section of the book, creates a new access point for visualising the topic. Whereas the difference between the profiles had before been clearly marked, that difference now runs between the texts and images of both profiles. This opens up a whole new, charged relationship and new levels of signification. This logic of confrontation is employed throughout the publication.

In the "evaluation" section of the publication, text diagrams are reproduced that situate the posts spatially according to the categories to which they are allocated. This is an attempt to create an operative form of imagery via diagrams. But even though this ordering clearly possesses propositional qualities in contrast to common or garden images, the evidence it pro-

See Sybille Krämer et al., eds., *Schriftbildlichkeit: Wahrnehmbarkeit, Materialität und Operativität von Notationen* (Berlin: Akademie Verlag, 2012), 81.

FIG.4
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FIG.5
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⌇⌇⌇ See Krämer, "Operative
Bildlichkeit," 104.
⌇⌇⌇ Ibid., 109.

vides is deceptive. ⌇⌇⌇ In short, this manner of depiction is interesting because here we can see something through the mirror of other things; but this schemata depends on the imagination of the observer. ⌇⌇⌇

REFLEXIVITY OF THE MEDIUM
     The end of the publication contains a copy of the materials used for the evaluations and the generative layout. The students themselves carried out their data gathering, but the process of transferring the data into their archival sections was carried out by means of this script that orders the different elements according to their categories and determines the format of their typography. This is a reflective moment for us as observers of their work, because here they depict the actual "tool" of their research. As a publication, Radical Speed Software thus also shows the means it employs to create its visualisations.
     The parallels between the implicit algorithm of Facebook and the Radical Speed Software created by the students are also interesting here. Both were designed with "showing" in mind. The method they devised is like a mirror in relation to their object, and is thus non-intentional at the level of what it mediatises. At such moments, the object appears in fragmentary form, in a greyscale of the page or in a cluster of similar image motifs. Yet the singularity of this moment recedes before a generalisable determination that is both a flaw and an advantage of its epistemology.

SUMMARY AND CONCLUSION
     The publication we have investigated here can be seen as an example of how practice-based design research is not about depicting statements or about creating similarities after the manner of a naturalistic depiction. It is, rather, about depicting and exploring the relationalism of an object to a medium within a system of representation. In the research itself here, the procedures were programmatic and at times also propositional and dramaturgical. "Showing" never refers solely to what is purported to be the object "to be shown," but also necessarily to the conventions of its

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visualisation. The perceptible, non-intentional "in-between" of the medium and its object here form the actual epistemological category of practice-based design research. This practice reveals the singular, in singular fashion. ⬜

See Dieter Mersch, "Sichtbarkeit/Sichtbar-machung: Was heißt 'Denken im Visuellen'?" (unpublished manuscript, 2013), accessed April 25, 2018, http://dieter-mersch.de/.cm4all/iproc.php/Mersch_Denken%20im%20Visuellen_2013.pdf?cdp=a.

To sum up, we can divide up the concept of "showing" in practice-based design research into the following aspects:

The medium corresponds to a knowledge-carrier about the object (the *what*), making aspects of it perceptible, and is never reducible solely to its semiotic components.

The medium also carries knowledge about how it was made itself. This is worked out in practice (the *how*), corresponding to a singular approach. To this end, exemplification and denotation as modes of communication come into play, as do the spatiality, transparency and disruption of the medium itself. Besides practice (acting and creating in concrete terms) and theory (abstract reflection), *techné* (art as manufacture) is involved in this process as a third aspect. Although these are all aspects of research, they also always include a rhetorical component. ⬜

Pierre Smolarski, *Rhetorik der Stadt: Praktiken des Zeigens, Orientierung und Place-Making im urbanen Raum* (Bielefeld: transcript, 2017).

Non-intentional traces of manufacture and of the product that are not influenced or registered by the researcher, yet co-determine its appearance.

DESIGN ALWAYS HAS TO OPERATE IN THE REALM OF THE PERCEPTIBLE