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## **Appearance In-Itself, Data-Propagation, and External Relationality: Towards a Realist Phenomenology of »Firstness«**

2016

<https://doi.org/10.25969/mediarep/18636>

Veröffentlichungsversion / published version

Zeitschriftenartikel / journal article

### **Empfohlene Zitierung / Suggested Citation:**

Hansen, Mark B.N.: Appearance In-Itself, Data-Propagation, and External Relationality: Towards a Realist Phenomenology of »Firstness«. In: *ZMK Zeitschrift für Medien- und Kulturforschung*. Verschwinden, Jg. 7 (2016), Nr. 1, S. 45–60. DOI: <https://doi.org/10.25969/mediarep/18636>.

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# Appearance In-Itself, Data-Propagation, and External Relationality

Towards a Realist Phenomenology of »Firstness«

*Mark B. N. Hansen*

## 1. A Phenomenology of the Diagram?

It is German media archaeologist, Wolfgang Ernst, who discerns the nexus binding contemporary media and diagrammatology: »The media-archaeological approach,« writes Ernst, »is in fact about the unrevealing of symbols, signals, and information. In the age of technology-driven media, both material archaeological strata and the symbolical order of the archive are progressively being conceived as essentially processual by nature, to be deciphered as operative diagrams—close to what Charles S. Peirce defined as »diagrammatic reasoning.« Humans almost irresistibly relate to images in an iconologic way, to sound in a musical way, and to texts in a hermeneutic way. But there is a kind of knowledge that can instead be uncovered from within the visual, acoustic, or textual endodata: entering the digitized record itself (data immersion), which is the media-archaeological gaze that can be performed by algorithmic machines of information processing better than by human perception. Such informatized organization of knowledge generates diagrams (which is also the Deleuzean interpretation of the Foucauldian archive)—infomapping.«<sup>1</sup>

For my purposes, what is most striking here is the implicit call Ernst advances for a diagrammatic phenomenology. (By this, again, I mean a phenomenology—a logic of appearance—that is rooted not in the constituting activity of subjects or consciousnesses, but in the self-manifestation of data itself.) When Ernst dismisses iconological, musical, and hermeneutic modes of sensing in favor of the »digitized record itself,« he necessarily raises the question whether and how processual diagrams can manifest the operability of media and to »whom« or to »what« such manifestation is destined. Does it still make sense to speak of the destination and reception of appearances, if the latter are generated »automatically« by the digitized record itself as part of its normal operability? And does it still make sense to

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<sup>1</sup> Wolfgang Ernst: *Digital Memory and the Archive*, Minneapolis/London 2013, pp. 27–28.

link these appearances to humans, if the digitized record operates outside of the range of human modes of sensing? How can—and indeed, *can*—media be said to appear to humans at all?

Precisely because of his effort to develop a non-subjective, pre-experiential phenomenology, Charles Sanders Peirce, the great American mathematician–philosopher–semiotician, can help us address these important and troubling questions. By developing a logic of appearance *that is independent of any reception of appearance in or by a subject*, Peirce facilitates an understanding of phenomenology as »self-manifestation of data.« And to differentiate it from orthodox (subjective) phenomenology, Peirce invents a new term: what he calls »Phaneroscopy« is the study of the »phaneron,« a concept that designates something like »appearance in itself,« the way the world appears, independent of its appearance *to* anyone or anything. Following Peirce’s lead, I shall try to sketch a non-subjective, pre-experiential, *realist* phenomenology of the diagram that enfolds potentiality into phenomenology: what diagrammatic appearance makes appear is precisely the potential of (pre-relational) quality (»Firstness«)—to become actualized in particular existent qualities or experience (»Secondness«). For this reason, such a realist phenomenology will also simultaneously constitute a media aesthetics of »Firstness.«

At the core of all of Peirce’s diverse philosophical contributions lies a certain commitment to realism, a fundamental distinction of what is real from what is existent: »Existence,« Peirce writes, »is a special mode of reality. [...] Reality in its turn is a special mode of being, the characteristic of which is that things that are real are whatever they really are, independently of any assertion of them.«<sup>2</sup> It is this distinction that secures the radicality of Peirce’s philosophical project: the autonomy of the real informs Peirce’s attempt to derive the basic categories of reality solely on the basis of »experience, in the sense of whatever we find to have been forced upon our minds.«<sup>3</sup> This means that—and here Peirce stands opposed to any transcendental philosophy—the pre-experiential domain of Firstness, though it is real as such, only comes into being in and through experience. This radical beginning serves to differentiate Peirce from his noteworthy predecessors, Aristotle and especially Kant, as well as from his more famous contemporary, Husserl. By deducing the real *from the existence it itself conditions*, Peirce’s philosophy makes good on Husserl’s dream to go back to the things themselves: »Peirce’s derivation of the basic categories, by going ›back to the things themselves,‹ involves

<sup>2</sup> Charles Sanders Peirce: *Collected Papers*, Harvard University Press 1958, 6.349, cited in Gérard Deledalle: *Charles Sanders Peirce’s Philosophy of Signs: Essays in Comparative Semiotics*, Bloomington, IN 2000, p. 71.

<sup>3</sup> Charles Sanders Peirce: *Carnegie Application, Statement*, Ms L 75, cited in William L. Rosensohn: *The Phenomenology of Charles S. Peirce: From the Doctrine of Categories to Phaneroscopy*, Amsterdam 1974, p. 37.

no presuppositions, no prejudgements about ›things‹ in the external world (whether *noumena* or ›unknown causes‹ originary of sensation), or transcendental egos ›doing‹ the thinking [...].<sup>4</sup>

This radical and self-contained inauguration of philosophy on the basis of just what is there in front of the mind (where mind need not be *human* mind)—or, more precisely, just whatever is the case—also serves to make Peirce's philosophy a phenomenology, albeit one of a particular sort. In contrast to the ›phenomenon,‹ understood as that which appears to *someone or something* (in phenomenology, most often, to *consciousness*), the phaneron simply is what is there, what is apparent or whatever is the case, *independent of the fact of its being perceived or even of its being presented to someone or something*. The phaneron is, therefore, precisely what is there in the beginning, and what constitutes the bedrock of Peirce's realism; it is the source for the inauguration of philosophy as well as the concept that defines what constitutes the all-important category of *Firstness*.

This fundamental connection of the phaneron to Firstness is crucial for my effort to deploy Peirce as a resource for reconceptualizing phenomenology. Phaneroscopy—here in stark contrast to orthodox phenomenology—*decouples* the issue of access from the status of reality. Firstness ›prescinds‹ the reality or presence of what is apparent from everything else, including any receptive activity whatsoever: ›the idea of the absolutely first,‹ says Peirce, ›must be entirely separated from all conception of or reference to anything else.‹<sup>5</sup> In some ways reminiscent of the primordial impression of Husserlian phenomenology, at least on the radical account given it by Levinas,<sup>6</sup> Firstness designates a category of reality that is absolutely removed from the domain of experience. Just as the primordial impression rests at

<sup>4</sup> Rosensohn: *The Phenomenology of Charles S. Peirce* (as note 3), p. 30.

<sup>5</sup> Charles Sanders Peirce: *Collected Papers*, Harvard University Press 1958, 1.357, cited in Deledalle: *Charles Sanders Peirce's Philosophy of Signs* (as note 2), p. 9.

<sup>6</sup> ›[...] when it turns out that this consciousness in the living present, *originally* non-objectifying and not objectified, is thematizable and thematizing in retention, without losing the ›temporal place‹ which gives ›individuation,‹ *then we see the non-intentionality of the primal impression fitted back in the normal order, not leading to the hither side of the same or of the origin*. Nothing enters incognito into the same, to interrupt the flow of time and interrupt the consciousness that is produced in the form of this flow. A putting the self-identity of the living present out of phase, a putting of the phases themselves out of phase, in the intentionality of retentions and protentions, the flow looks like a multiplication of modification dispersing from the living present. In Husserl the time structure of sensibility is a time of what can be recuperated. The thesis that the non-intentionality of the primal retention is not a loss of consciousness, that nothing can be produced in a clandestine way, that nothing can break the thread of consciousness, excludes from time the irreducible diachrony whose meaning the present study aims to bring to light, behind the *exhibiting of being*«. Emmanuel Levinas: *Otherwise Than Being, or, Beyond Essence*, transl. by Alphonso Lingis, Duquesne University Press 1999, p. 33 (emphasis added).

a remove from the modifications that retention and protention impose on it (and that serve to *correlate* it with a mode of receptivity), so too is Firstness at a remove from the events into which it will come to be implicated. Put another way, both the primordial impression and Firstness demarcate a level of reality that is, in itself, fundamentally *inaccessible*.

It is this withdrawal of Firstness from any direct access that makes Peirce's phaneroscopy a »logic,« and not a psychology or a phenomenology of consciousness. The radical self-containment of Firstness both motivates and explains the double operation of Peirce's categories, which must function ontologically *and* gnoseologically.<sup>7</sup> Asking whether there is a »parallelism« between these two distinct operations of the categories, Gerard Deledalle comes to the following striking conclusion:

»The ontological categories are logical, the gnoseological categories are psychological [...]. Which explains the distinction between phaneron and phenomenon, not because they are two different things, but because there are two different approaches: one logical (phaneron), the other psychological (phenomenon). [...] as thought gnoseologically [the categories] are conscious and then Third, as ontological they are real, that is to say, according to Peirce's definition of reality, either a possibility, or a fact, or a law. A logician as a human being deals, like a physicist, with objects *completely different from the consciousness he may have of them*. But he *cannot* think them without »instances,« or »occurrences,« or, to use the Peircean neologism, *replicas* of which he is aware and of which he has »in his mind« an image or icon [...].«<sup>8</sup>

Deledalle's distinction highlights the radicality of the phaneron, or more precisely, the radicality of the phaneron *as Firstness*: restricted to its status as phaneron, the phenomenon is pre-experiential and remains fundamentally disjoined from any means of access or form of presentation, whether this be through consciousness or through datafication.

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<sup>7</sup> Deledalle makes this distinction between these two operations of the categories, based on this passage from Peirce: »[T]he first, the second, and the third are all three of the nature of thirds, or thought, while in respect to one another they are first, second, and third. The first is thought in its capacity as mere possibility; that is mere *mind* capable of thinking, or a mere vague idea. The *second* is thought playing the role of a Secondness, or event. That is, it is of the general nature of *experience* or *information*. The third is thought in its role as governing secondness. It brings the information into the mind, or determines the idea and gives it body. It is informing thought, or *cognition*. But take away a psychological or accidental human element, and in this genuine Thirdness see the operation of a sign« (1.537), cited in Deledalle: Charles Sanders Peirce's Philosophy of Signs (as note 2), p. 72.

<sup>8</sup> Deledalle: Charles Sanders Peirce's Philosophy of Signs (as note 2), p. 72 (emphasis added).

It is precisely this absolute disjunction of the phaneron from any presentation, of Firstness from its mediation by Thirdness, that makes Peirce's phaneroscopy so valuable for rethinking the phenomenon in the context of our contemporary data revolution: as the radically withdrawn kernel of any imaginable phenomenology, the phaneron is *agnostic* concerning how it is accessed. The phaneron can accordingly be accessed by a variety of approaches—or as Peirce would put it, through a variety of *replicas*—each of which determines how the phaneron is correlated with experience. The operation of replication through which the phaneron can be accessed is always and necessarily *indirect* and *subsequent* to its radical »reality« as pure quality; as such, access has absolutely no bearing whatsoever on the reality of the phaneron itself, though it certainly matters for how—and how much of—that reality comes into appearance. It is precisely in this sense that Peirce's phaneroscopy informs what I am conceptualizing as a realist, diagrammatic phenomenology: as replicas that give access to the phaneron (the appearance of the world as such), diagrams are far more capacious than consciousness or any of its avatars.

## 2. »Realist Phenomenology«

Peirce's phaneroscopy constitutes the basis for what I would like to call »realist phenomenology.« As its »first principle,« such a phenomenology stipulates that access is a logical, and *not* a psychological or subjective, matter. By insisting on the absolute resistance of reality—the phaneron—to any direct access, a realist phenomenology categorically decouples reality from subjectivity and institutes in the place of a founding consciousness (or any of its avatars) a semiotic logic that operates in strict accord with the triadic structure of reality. One crucial consequence of this displacement of consciousness by semiosis is that the phaneron, i.e., Firstness, cannot be directly known, perceived, or intuited, and is always at an unbridgeable remove from any direct access. In this, it differs not simply from orthodox phenomenology (Husserlian), but also from developments with which it might seem to resonate, including the »objective phenomenology« proposed by Alain Badiou and Daniel Dennett's »heterophenomenology.«<sup>9</sup>

By pluralizing modes of access to the phaneron, Peirce's phaneroscopy allows us to ask whether the type of replica at issue in any given experience makes a difference to the scope of the access it affords and thereby to experience itself. This, again, is precisely the issue at stake in Ernst's suggestion that diagrams might prove

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<sup>9</sup> Daniel Dennett: *Who's On First?: Heterophenomenology Explained*, in: *Journal of Consciousness Studies* 10/9–10 (2003), pp. 19–30; Alain Badiou: *Logics of Worlds (Being and Event II)*, transl. by Albert Toscano, London/New York 2009, p. 39.

more successful than qualitative phenomena in providing access to the technical processes of today's cultural objects, and in mediating them for experience. We must therefore ask: Do diagrams constitute different kinds of replicas than thoughts or contents of consciousness? If they do, can they serve to open mediated, indirect access to the phaneron via experiential modes that exceed the scope of consciousness? And can they do so even though they can only be known to do so if they are thematized *by consciousness*?

It should be self-evident that my answer to all of these questions is an unqualified »yes.« The diagram can usurp consciousness's role as phenomenologizing agent precisely and only because both diagram and consciousness stand in the exact same functional relation to the phaneron: both are replicas that are absolutely disjoined from any direct access to the phaneron and to Firstness. Where they differ is precisely in their scope: contrasted with consciousness as replica—a replica that reduces the phaneron to a content of consciousness—the diagram-replica can deploy the full resources of Peirce's semiotics.

As one of the ten types of signs in Peirce's 1903 semiotics, the Dicisign is distinguished by its capacity to convey information not only about its object, but about the very referential relation between itself and its object. In this sense, the Dicisign can be said to have two objects: the real object (its »primary« object) and the represented referential relation (its »secondary« object). Insofar as the Dicisign functions as a »representation of the indexical relation« between the sign itself and its object (while at the same time actually representing that object itself), it operates as an indexical relation of secondness linking together the real object it indicates with the qualities (Firstness) it iconizes: »These two parts must be represented as connected; and that in such a way that if the Dicisign has any Object, it [the Dicisign] must be an Index of a Secondness subsisting between the Real Object represented in one represented part of the Dicisign to be indicated and a Firstness represented in the other represented part of the Dicisign to be Iconized.«<sup>10</sup>

Two important consequences follow from this twofold operability of the Dicisign: first, it opens the possibility to link the sign's representation of its object to the qualities it iconizes (Firstness)—that is, to actualize Firstness as Secondness—in a way that is *fully autonomous from consciousness or mind, narrowly considered*; and second, it facilitates the drawing of a distinction of the specific parts—the qualities—of the »dynamical object« with which the sign stands in indexical connection *from* the dynamical object itself, and it holds these two relations separate *such that its presentation of quality is in no way a function of its representation of the object*. The former relation, the presentation of qualities, is called the »immediate object,«

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<sup>10</sup> Frederik Stjernfelt: *Diagrammatology: An Investigation on the Borderlines of Phenomenology, Ontology, and Semiotics*, Dordrecht 2007, p. 69.

and is—to quote Peirce himself—»only a possible presentment of a dynamic object, a fragment of it, the rest being held in reserve«; it follows—and this is a crucial point—that there is nothing in the immediate object to prevent contradictory attributes being separately possible of it.«<sup>11</sup> In light of this distinction between immediate and dynamical object, we must understand the relation of secondness generated by the Dicsign to be a relation of potentiality: because it maintains a double sign relation, to the object itself and to the *specific or »immediate« connection to some elements of the object's mediation of Firstness (quality)*, the Dicsign remains open to variant, potentially impossible, objectal mediations of Firstness (quality). What the Dicsign presents, then, is a second that is excessive in relation to its own signification, and whose excess expresses—albeit in the mode of relationality, or better, of non-actualized but still actual relationality—the potentiality of the Firstness or quality it actualizes. As a second whose »content« is relationality itself, the Dicsign is the privileged semiotic agent of diagrammatic phenomenology.

This excess of secondness in relation to its own signification is precisely what informs the »generative« power of diagrams following Peirce's understanding of them. The diagram is a subtype of the icon (one of the three major sign types in all of Peirce's categorizations) that represents relations of an object through analogy with its own constitutive relationality: it is an icon that represents the »relations [...] of the parts of one thing by analogous relations in their own parts [...]«<sup>12</sup> This homology of relational form is precisely what renders the diagram a technology for experimentation with relationality itself: as Peirce takes pains to emphasize, we can experiment with the potentiality of an object by varying the relationality of the diagram for that object. As such, diagrams possess the potential to expand the margin of openness that, for Peirce, characterizes deduction, and even more so, abduction: what is at issue in diagrammatic variation is the potential to imaginatively experiment upon an image (the diagram itself, i.e., a type of image whose relations present a complete analogy with the parts of the object represented) in order to »discover unnoticed and hidden relations among the parts,«<sup>13</sup> or better, relations that are only potential within or in relation to the actualized diagram.

As contrasted with phenomenological consciousness, which assimilates Firstness as its *sensory content*, the diagram allows the excess of Firstness to persist. Whereas consciousness thus reduces the constitutive excess of Firstness to something completely actualized and completely contained within it, the diagram preserves it in

<sup>11</sup> Charles Sanders Peirce, cited in Stjernfelt: *Diagrammatology* (as note 10), p. 99.

<sup>12</sup> Charles Sanders Peirce, from *The Essential Peirce*, vol. 2, p. 274, cited in Matthias Bauer and Christoph Ernst: *Diagrammatik: Einführung in ein kultur- und medienwissenschaftliches Forschungsfeld*, Bielefeld 2010, p. 43.

<sup>13</sup> Charles Sanders Peirce: *On the Algebra of Logic*, cited in Stjernfelt: *Diagrammatology* (as note 10), p. 268.



the mode of potentiality, alongside whatever particular actualizations it operates. To appreciate the phenomenological significance of this distinction, we could once more invoke the early Levinas's criticism of Husserl for compromising the autonomy of sensation.<sup>14</sup> The key point for both Levinas and Peirce is that sensation or Firstness *does not originally have the form of conscious content* (and indeed, need not take this form at all): the imposition of this form radically denatures sensation (or quality), transforming it from a heterogeneous force of worldly materiality (phaneron) into a building block of consciousness that exercises its power exclusively within and as an element in the latter's constitution and operation.

By contrast, the diagram—precisely because it represents its object by channeling that object's qualities semiotically, rather than through sensation restrictively understood as the content of consciousness—has access to what one Peirce commentator calls the extra-sensory, »aesthetic dimension« of experience, »a world of phenomena too often neglected by students of psychology and even philosophers« that encompasses a »range of qualities of feeling [...] far beyond the usual continua of sensible qualities, which include colors, tastes, odors, sounds, aches and other bodily feelings.«<sup>15</sup> As the agent of such »extra-sensory« presentation of Firstness (worldly sensibility), and in stark contrast to consciousness, the diagram thus operates in relation to an excess that lies »outside« of the relations it actualizes. This excess provides what we might think of as a diagrammatic »possibility space« for the non-egoic or »machinic« imaginative variation for which diagrams serve as vehicles. The operator of such variation is diagrammatic relationality itself, or what Peirce calls »general mind,« and the imagination at issue here is an operation of semiotic experimentation on the possibility space of Firstness.

### 3. From Relational to Open-Ended Databases

Having established how diagrams can displace consciousness and assume the role of replica that phenomenalyze the phaneron, we can turn to the indexical operation of contemporary topological media in order to explore how contemporary databases operationalize diagrammatic potentiality. Let us reiterate the crucial role played by *external relationality*—on the one hand, for the abstract potential for databases to »data-fy« and interconnect literally everything in the world, and, on the other, for the concrete development of database form from the heyday of the relational paradigm in the 1970s until the open-architecture world wide web of today. Fruit of the reconceptualization of data as relation, external relationality

<sup>14</sup> Levinas: *Otherwise Than Being* (as note 6).

<sup>15</sup> Rosensohn: *The Phenomenology of Charles S. Peirce* (as note 3), p. 81.

constitutes the most fundamental and most important accomplishment of the relational paradigm and the core of its legacy to the future of computing.

The reconfiguration of data as relation is facilitated by a certain deployment of set theoretical logic. On the relational paradigm, every relation is conceptualized as a set of subsets of data, a set that Edward Codd, the father of the relational database, names a »Tupel.« Every Tupel is a collection of elements and, for that simple reason, possesses the same structure as every other Tupel. In his 1970 paper on the relational model, Codd emphasizes this structural homology, together with its mathematical (set theoretical) provenance: »The term *relation* is used here in its accepted mathematical sense. Given sets  $S_1, S_2, \dots, S_n$  (not necessarily distinct),  $R$  is a relation on these  $n$  sets if it is a set of  $n$ -tuples each of which has its first element from  $S_1$ , its second elements from  $S_2$ , and so on. We shall refer to  $S_j$  as the  $j$ th *domain* of  $R$ .«<sup>16</sup> Every specific collection of elements constituting a Tupel correlates with a distinct entity, about which that Tupel bears information. As a result, as Matthias Burckhardt points out in his recent mediatheoretical study of databases, the formal description of entities and their inter-relations stand in the foreground, even though they are conceptualized as relations of sets of  $n$ -tuples, which is to say, as collections of information about entities. As Burckhardt points out, the modelling of entities on the basis of set theory renders them so many distinct collections of information that make up distinct parts of the total information collection comprising the database as a whole.

The crucial payoff of the relational paradigm, beyond the data independence that forms its reason-for-being,<sup>17</sup> is thus the *dissolution of the distinction between entity and relation*. Because entities are modelled set theoretically as collections of information, »the difference between the One (information about an entity) and the Many (collections of information about entities) is suppressed. Whether a relation contains only one Tupel or a great many Tupels is irrelevant from the set-theoretical perspective, since in either case what is a issue is a relation. In this sense, the passage from many to one can be conceptualized and formalized as a translation of one relation into another. Moreover, the differentiation between entities and relations is dissolved [...]«<sup>18</sup>

<sup>16</sup> E. F. Codd: A Relational Model of Data for Large Shared Data Banks, in: Communications of the ACM 13/6 (1970), pp. 377–387: 379.

<sup>17</sup> »In contrast [to network models that rely on deductive question-answering systems], the problems treated here are those of *data independence* – the independence of application programs and terminal activities from growth in data types and changes in data representation – and certain kinds of *data inconsistency* which are expected to become troublesome even in nondeductive systems«. Codd: A Relational Model of Data for Large Shared Data Banks (as note 16), p. 377.

<sup>18</sup> Marcus Burkhardt: Digitale Datenbanken: Eine Medientheorie im Zeitalter von Big Data, Bielefeld 2015, p. 251.

This dissolution of the difference demarcating entities from relations is fundamental not just for the relational paradigm but *for every subsequent development in database design*. By reconceptualizing what an entity is and by modelling every entity as a distinct set—theoretically determined collection of data that is, despite its distinctiveness, not different in kind from other collections of data in a database, up to and including the totality of data constituting that database itself,<sup>19</sup> the relational paradigm has dictated and continues to dictate the terrain on which the datafication of the world takes place. This means that the object-oriented, relational paradigm is articulated on the basis of what is and remains *a potentially open-ended principle of data propagation*.

It is important that we situate the limitations of the relational paradigm in a historical perspective, where they appear less as design flaws than as constraints imposed on the underlying computational algorithms driving database operability, and in particular, on search mechanisms. Codd himself speaks to this situation when he claims that the »universality of the data sublanguage lies in its descriptive ability« and not »its computing ability«: by this, he means to foreground the finite repertoire of possible search paths that is, as it were, pre-instituted from the outset by the database's structural logic: »In a large data bank each subset of data has a very large number of possible (and sensible) descriptions, even when we assume (as we do) that there is only a finite set of function subroutines to which the system has access for use in qualifying data for retrieval.«<sup>20</sup> In the relational paradigm, in other words, everything is already »there« in the database; the question is how to find it.

The historical limitations of the relational paradigm ultimately impugn its underlying mathematical structure: it is precisely the finite and pre-instituted, set-theoretically articulated structure of relational databases that hinders the power and scope of their own core innovation: the treatment of entities as relations. In order to tap the full potential of external relationality—the very operation that allows datafication to encompass literally everything in the world—we must consequently dispense with Codd's obsession with data independence (the isolation of internal logic of data storage from its external use or application) in favor of a »schema-free« system of data »whose openness and capacity for connection are not

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<sup>19</sup> On this point, Codd notes that »the totality of data in a data bank may be viewed as a collection of time-varying relations« that comprise permutations of its elements: »These relations,« Codd continues, »are of assorted degrees. As time progresses, each  $n$ -ary relation may be subject to insertion of additional  $n$ -tuples, deletion of existing ones, and alteration of components of any of its existing  $n$ -tuples.« Codd: *A Relational Model of Data for Large Shared Data Banks* (as note 16), p. 379.

<sup>20</sup> Codd: *A Relational Model of Data for Large Shared Data Banks* (as note 16), p. 382.

inscribed in the configuration of the technical information structure« but rather constitute a ›contingent feature‹ of the system.«<sup>21</sup>

The appearance of internet search engines provides a vehicle for just such a development: because they operate according to relations between entities rather than through correlations of internal content, internet search engines mark a fundamental transition point in the recent history of database design. In the process of making discoverable the totality of the information available on the World Wide Web, search engines invest the operation of searching with a new importance: searching is literally what creates meaning, or rather, *relevance*. Burckhardt explains: »The effectiveness of [internet] search engines stems from algorithmic procedures for the ascription of meaning. It is not just the potentially discoverable information that is unknown, but also the rules for the attribution of meaning as well as for the selection of information, which is why the search operation must be treated as a black box. Web search engines also aid in the processing of meaning, although it is not the sense or content of digital information that stands in the foreground, but rather *the relevance of web documents for the searcher*.«<sup>22</sup> With the displacement of meaning in favor of relevance, external relationality is liberated from any form of containment in or restriction to a closed data system. No longer tethered to the internal content of data,<sup>23</sup> its creative potential instead arises as a function of its capacity to forge relations via the criterion—and creativity—of relevance: »The quality or relevance of a webpage is not assessed on the basis of internal content [*anhand inhaltlicher Kriterien*], but rather through ›hypertextual citation structure‹ [citing Page and Brin's 1998 paper on the PageRank algorithm].«<sup>24</sup>

Where external relationality is concerned, however, the search engine paradigm manifests a fundamental limitation. Despite liberating external relationality as just discussed, internet searches must impose a constraint on the data its makes available: searching can only succeed if data is closed off from the open ecology of the web. Burckhardt explains: »Web searches using Google are substantively based on the assembly of the WWW into a database. This translation is however only a first step in the realization of search functionality, a step which allows the user of the Google search engine to interact at best indirectly with the database web table. Far more decisive is the fact that the web is rendered manageable as a whole through the translation of the open net architecture of the WWW into a closed database structure.«<sup>25</sup> As this passage makes clear, such translation is the condition for any assembly of data from the radically open WWW to be totalized and thereby

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21 Burckhardt: *Digitale Datenbanken* (as note 18), p. 247.

22 *Ibid.*, p. 260 (emphasis added).

23 *Ibid.*, p. 257.

24 *Ibid.*, p. 261.

25 *Ibid.*, p. 264.

made manageable. Although—ontologically speaking—data is no longer contained or stored *in* the database, as it was in the earlier, relational paradigm, the pragmatics of generating useable results compromises whatever gains result from this shift: while documents can be assembled from anywhere on the web, once assembled they must form a closed system or ecology in order to match data to user following the principle of relevance.

It is only with the development of the so-called Semantic Web—understood as one instance of a broader turn to semantic relationality—that this constraint would appear to be overcome. By trading in relevance between documents for relevance based on the *semantic content of documents*, this new paradigm expands the open-endedness introduced by search engines *without imposing any demand for closure*. As Tim Berners-Lee explains, the Semantic Web is intended to enlarge the »universality« of the World Wide Web, the »essential property« that derives from the fact that »anything can link to anything.«<sup>26</sup> To do so, the Semantic Web enfoldes the process of meaning ascription *into the computational search procedure itself*; consequently, it dispenses with meaning traditionally considered (meaning as internal content) in order to focus on incorporating and automating the *relevance relation* between documents (or, more precisely, URIs<sup>27</sup>): »Information varies along many axes. One of these is the difference between information produced primarily for human consumption and that produced mainly for machines. At one end of the scale we have everything from the five-second TV commercial to poetry. At the other end we have databases, programs and sensor output. To date, the Web has developed most rapidly as a medium of documents *for people* rather than for data and information *that can be processed automatically*. The Semantic Web aims to make up for this.«<sup>28</sup>

The Semantic Web aims, in other words, to create a global, interconnected data space or »Web of Data.« It is able to create such a data space by proliferating external relations through what are called »External RDF links.« Resource Description Framework (RDF) links provide a relational procedure for connecting not just documents, but tangible things and abstract concepts; not only do external RDF links potentially connect anything and everything in the world, they specify the

<sup>26</sup> Tim Berners-Lee, James Hendler and Ora Lassila: The Semantic Web, in: *Scientific American* 284/5 (2001), pp. 34–43: 37.

<sup>27</sup> URI is an acronym for »uniform resource identifier.«

<sup>28</sup> Berners-Lee, Hendler and Lassila: The Semantic Web (as note 26), p. 37 (emphasis added). »Most of the Web's content today,« Berners-Lee et al. reiterate, »is designed for humans to read, not for computer programs to manipulate meaningfully. Computers can adeptly parse Web pages for layout and routine processing—here a header, there a link to another page—but in general, computers have no reliable way to process the semantics [...].« Berners-Lee, Hendler and Lassila: The Semantic Web (as note 26), p. 36.

nature of the connection between the entities they link (e.g., *mybook* forSaleIn *thatbookshop* locatedIn *mycity*<sup>29</sup>). »RDF links describe the relationship between two resources. RDF links consist of three URI references. The URIs in the subject and the object position of the link identify the related resources. The URI in the predicate position defines the type of relationship between the resources.«<sup>30</sup> As links that connect resources served by different linked data sources or, alternatively, URIs from different namespaces, external RDF links are fundamental for the Web of Data: they are both »the glue that connects data islands into a global, interconnected data space« and what enables »applications to discover additional data sources in a *follow-your-nose* fashion.«<sup>31</sup>

As a procedure to *forge* what Gilles Deleuze calls »produced resemblance,« RDF links provide a concrete means for external relationality to realize its radical creative potential. »[...] resemblance is a product,« Deleuze writes, »when it appears abruptly as the result of relations that are completely different from those it is supposed to reproduce: resemblance then emerges as the brutal product of nonresembling means. [...] a sensible resemblance is produced, but instead of being produced symbolically, through the detour of code, it is produced »sensually,« through sensation. The name »aesthetic Analogy« must be reserved for this last eminent type, in which there is neither primary resemblance nor prior code, and which is both nonfigurative and noncodified.«<sup>32</sup> Despite its origin in an analysis of painting as an analogic artform, Deleuze's concept of produced resemblance provides a precise and incisive account of how diagrams, as opposed to code, can inject (or reinject) sensibility into the digital. Since diagrams are compositions of an open and disparate qualitative field of »pure icons« that »range far beyond qualitative similitude,«<sup>33</sup>—compositions of the radically heterogeneous, qualitative field of Firstness<sup>34</sup>—they

<sup>29</sup> Tom Heath and Christian Bizer: *Linked Data: Evolving the Web into a Global Data Space*. Synthesis Lectures on the Semantic Web: Theory and Technology, San Rafael 2011, available at: <http://info.slis.indiana.edu/~dingying/Teaching/S604/LODBook.pdf>, Section 1.3.

<sup>30</sup> Heath and Bizer: *Linked Data* (as note 26), Section 2.4.1. Heath and Bizer's account aims to explicate Tim Berners-Lee's four rules for the publication of semantic data: »1. Use URIs as names for things; 2. Use HTTP URIs so that people can look up those names; 3. When someone looks up a URI, provide useful information, using the standards (RDF\*, SPARQL); 4. Include links to other URI, so that they can discover more things«.

Tim Berners-Lee: *Linked Data*, 2006–07–27, last change: 2009/06/18, under: <https://www.w3.org/DesignIssues/LinkedData.html>.

Heath and Bizer: *Linked Data* (as note 26), Section 2.4.1.

<sup>31</sup> *Ibid.*, Section 2.5.

<sup>32</sup> Gilles Deleuze: *Francis Bacon: The Logic of Sensation*, transl. by Daniel W. Smith, Minneapolis 2005, p. 94.

<sup>33</sup> *Ibid.*, p. 95.

<sup>34</sup> Introducing Peirce's category of Firstness—understood (as introduced above) as a field of

are by definition analogical in the radical sense Deleuze attributes to the term: they wield the force of aesthetic Analogy.

It is precisely this force—the power to produce analogy (relation) through *superficial* sensuous resemblance (rather than via the depth-structure of code)—that explains the creative potential informing the data-propagation of sensibility. What Deleuze says about analog synthesizers thus applies equally, though with far greater scope, to the open-ended databases of today's Semantic Web, which can now be understood as the diagrammatic agents of a generalized »modulation.«<sup>35</sup> Unlike the relational database and search engine models, where unexpected relationality was hidden in »the depths of the computer,« either as associations of Tupels (sets) that are »only latently given« or as black-boxed search procedures (the PageRank algorithm) contained within Google's server farms,<sup>36</sup> the semantic model »makes the Web of Data visible on the surface through its user interface.«<sup>37</sup> New data is produced not through a combinatorics operating on a closed data space and following rule-bound structures, but through the forging of new relations between real entities that are not only not pre-structured as data forms but that were not previously connected at all. In this respect, although I cannot go into it here, the semantic paradigm resonates with mathematical category theory, where the primacy of relations is so strong that the »internal content« of objects, and indeed objects as such, are effectively distilled away, leaving only a robust and highly complex, promiscuous web of relationality. Not only does external relationality allow for the inclusion of unstructured, messy data (which by some estimates accounts for 95% of the data constituting today's Big Data),<sup>38</sup> but, even more importantly, it explains how new data is produced through the forging of new relations. It explains, that is, how »sensibility« is »data-propagated.«

In addition to opening database operationality to the inexactitude of real-world processes, thereby effectively rendering it a form of computation »in-the-wild,«<sup>39</sup>

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pure qualitative potentiality—allows us to contest Deleuze's criticism of Peirce for reducing the diagram »to a similitude of relations« Deleuze: Francis Bacon (as note 32), p. 162. Despite whatever Peirce might have said to this effect, it remains incompatible with his broader ontology of categories, and with the continuum of the phaneron that I am attempting to explicate here.

<sup>35</sup> Modulation designates the operationality of the open-ended qualitative field of pure icons or diagrams: »[...] it is perhaps the notion of modulation in general (and not similitude) that will enable us to understand the nature of analogical language or the diagram.« Deleuze: Francis Bacon (as note 32), p. 95.

<sup>36</sup> Burkhardt: *Digitale Datenbanken* (as note 18), p. 257 and 265.

<sup>37</sup> *Ibid.*, p. 280.

<sup>38</sup> Victor Mayer-Schönberger and Kenneth Cukier: *Big Data: A Revolution That Will Transform How We Live, Work, and Think*, Boston/New York 2013, p. 47.

<sup>39</sup> The reference here is to Edwin Hutchins study of distributed navigational procedures on-

today's semantic paradigm thus calls for linked data to be treated as a kind of *social* relationality. Because data must be abstracted from its context of origin and because there are no hard-and-fast rules to govern its operation,<sup>40</sup> an ineliminable degree of contingency—what data scientists Heath and Bizer call a »significant uncertainty«—necessarily attaches to any and every production of data via external relationality. It is precisely this uncertainty—more precisely, *its ineliminability*<sup>41</sup>—that enjoins us to engage the Web as a »social system,« the content of which, as Heath and Bizer explain, »needs to be treated as claims by different parties rather than facts.«<sup>42</sup> With this development, we come to realize that database operationality is far less about exact rendering of preinscribed data than it is about the experimental production of new relations following the exercise of what Peirce dubs »theorematic« reason.<sup>43</sup>

#### 4. Conclusion: External Relationality Generalized

The external relationality underlying and informing today's Big Data paradigm provides a procedure for forging analogies on the basis of an open-ended, ongoing, and potentially infinite proliferation of data. In the wake of this generalized operationality of external relationality, we can see clearly why diagrams can succeed where consciousness cannot: as replicas of the heterogeneous qualitative field of pure icons, diagrams are able to present the modulation of worldly sensibility

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board large ocean-bound vessels, see Edwin Hutchins: *Cognition in the Wild*, Cambridge 1995.

<sup>40</sup> Berners-Lee's »rules« are really more like suggestions for best or most efficient practices; they must be embraced by users to be put into effect, see Berners-Lee: *Linked Data* (as note 30).

<sup>41</sup> Berners-Lee, Hendler and Lassila express this succinctly when they note that semantic web researchers »accept that paradoxes and unanswerable questions are a price that must be paid to achieve versatility.« They furthermore liken this situation to the caesura in the history of mathematics imposed by Gödel's incompleteness theorem: »The problem is reminiscent of Gödel's theorem from mathematics: any system that is complex enough to be useful also encompasses unanswerable questions [...].« Berners-Lee, Hendler and Lassila: *The Semantic Web* (as note 26), p. 38.

<sup>42</sup> Heath and Bizer: *Linked Data* (as note 29), cited in Burkhardt: *Digitale Datenbanken* (as note 18), p. 277.

<sup>43</sup> Peirce defines theorematic reasoning, as contrasted with »corollarial reasoning« as a »deduction in which it is necessary to experiment in the imagination upon the image of the premiss in order from the result of such experiment to make corollarial deductions to the truth of the conclusion.« Charles Sanders Peirce: *Carnegie Application, Statement*, Ms L 75, pp. 268–272, under: <http://www.iupui.edu/~arisbe/menu/library/bycsp/L75/ver1/l75v1-06.htm#m19>



as an open-ended proliferation of resemblances produced from out of and on the basis of that sensibility itself. We can also see clearly why the open-ended, temporally-realized, and potentially infinite data accumulation of today's »Web of Data« exemplifies this diagrammatic operation: by operationalizing the capacity to forge resemblances or relations through sensuous means, today's databases function diagrammatically, and indeed, automate the diagrammatic production of relationality. Finally, we can see clearly how the diagrammatic operationality of today's databases requires a phaneroscopy, or realist phenomenology, that decouples appearance not just from consciousness, but from any recipient whatsoever, and that—for this very reason—affords expanded access, via diagrams as replicas, to the manifestation of the radically heterogeneous, qualitative field of Firstness, to phaneron's appearance as relational potentiality destined to no one or nothing in particular.

What results from these coordinated developments is a picture of the imbrication of the real world and data: »[...] in naming every concept simply by a URI,« Berners-Lee and his collaborators explain, the Semantic Web »lets anyone express new concepts that they invent with minimal effort. Its unifying logical language will enable these concepts to be progressively linked into a universal Web. This structure will open up the knowledge and workings of humankind to meaningful analysis by software agents, providing a new class of tools by which we can live, work and learn together«<sup>44</sup>—and by which, we might add, we can share a world together, where the »we« and the »together« designate not humans or even sentient beings exclusively, but quite literally *everything that is implicated in the ongoing modulation of worldly sensibility*. On this picture, and in line with the animating principle of Peirce's realism, it is sensibility itself that informs its own data-propagation, understood both as (self-) manifestation *and* (self-) proliferation. Far from bending reality to fit data, data is thus rendered a function of the real world, an expression of its ongoing modulation: literally the product that results from the forging of relations between hitherto unrelated terms, every datum is a sensuously-produced relation that simultaneously *expresses or manifests* and *contributes to* worldly sensibility itself.

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<sup>44</sup> Berners-Lee, Hendler and Lassila: The Semantic Web (as note 26), p. 43.