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# **BECOMING-SOCIAL IN A NETWORKED AGE**

Neal Thomas



# Becoming-Social in a Networked Age

“This is the book on post-documentary technologies that I’ve been waiting for: an understandable, but also deep and critical explanation of the philosophical assumptions, the form and functions, and the political implications and possibilities of recent new media technologies.”

—*Ronald E. Day, Indiana University at Bloomington*

“This book proves that critical consideration of the processes of subjectivity belong in the foreground of media, technology and software studies. Vanquishing the shallow presumptions of subjecthood and identity that linger in accounts of social computing, Neal Thomas expands the philosophical space currently available for the investigation of how sociality is constituted and a post-individual subjectivity is structured by a-signifying machinic relations.”

—*Gary Genosko, University of Ontario  
Institute of Technology*

This book examines the semiotic effects of protocols and algorithms at work in popular social media systems, bridging philosophical conversations in human-computer interaction (HCI) and information systems (IS) design with contemporary work in critical media, technology and software studies. Where most research into social media is sociological in scope, Neal Thomas shows how the underlying material-semiotic operations of social media now crucially define what it means to be social in a networked age. He proposes that we consider social media platforms as computational processes of collective individuation that produce, rather than presume, forms of subjectivity and sociality.

**Neal Thomas** is Assistant Professor of Media and Technology Studies in the Department of Communication Studies at the University of North Carolina at Chapel Hill, USA.

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*Neal Thomas*

# Becoming-Social in a Networked Age

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# 1 On the Notion of a Formatted Subject

Technology at present is covert philosophy; the point is to make it openly philosophical.

—Philip E. Agre, *Computation and Human Experience* (1997)

How should we make sense of the global, social computing apparatus that now frames and permeates our lives? Any response we offer to the question will be complicated simultaneously by the intense enthusiasms and persistent anxieties that we harbor toward the technology. Through it, we enjoy instant connection to friends and public figures on social media, the fluid circulation of culture and ideas, and unforeseen opportunities for trade and collaboration. But these benefits call forth real concerns in the very same breath: the demise of privacy, intellectual de-skilling, and the potential for massive layoffs thanks to automation, as well as pernicious new forces of economic exclusion, political repression, and interpersonal alienation, which come along with our new transparency to one another. Real-time sentiment analysis of social media now modulates public opinion, political possibility, and consumer affect to an ever-finer degree. There is talk of social network activity becoming a factor in the extension of financial credit, and meanwhile, a sensor-enabled Internet of Things is on the march, complicating the relationship between our computer devices and the infrastructural technologies and systems that make up our built environment. The philosopher Bernard Stiegler diagnoses the situation as an industrialization of all things, which he fears is leading to the widespread *disfiguration* of the individual.<sup>1</sup>

Thinking through the consequences of these technological “innovations” as they were emerging back in 2010, inventor of the World Wide Web Sir Tim Berners-Lee and his coauthor James Hendler described the situation in which we now find ourselves in the more pragmatic terms of a rise of *social machines*, which had begun to connect and process knowledge together through a computational medium that they called *global graphs*.<sup>2</sup> It is relatively easy to recognize our phones and their attendant infrastructures as social machines; but what exactly is a global

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graph? The first, but as we shall see by no means last, way of answering this question is that graphs are both a way of structuring data and acting algorithmically on that data, using a set of practices called graph theory to mathematically model *pairwise relations*. Global graphs materialize in information systems (IS) the vast representational webs of relation that social computing platforms require in order to automate knowledge about the world and our roles in it.

If the central motivation of this book is to begin to see these global graphs as a collectivizing medium, then we might start from a basic premise of Friedrich Nietzsche, fondly quoted by the German media theorist Friedrich Kittler, that “our writing tools are also working on our thoughts.”<sup>3</sup> What I take him to mean is that like every other writing technology before it, social computing, via global graphs, functions according to certain logico-representational techniques, which organize and generalize the conditions for thinking and communicating in particular ways. Unavoidably, their techniques must therefore foreground certain intellectual commitments, modes of engagement, and effects on collective judgment, which we adopt in using the technology to represent our daily lives. Examining the functional mixture of network science, human-computer interaction (HCI), protocols, and algorithms that make social computing possible, this work will be attempting to triangulate our enthusiasms and anxieties in relation to global graphs. It will follow Stiegler, Hendler, Berners-Lee, and others, in contending that social computing platforms now amount to a kind of *philosophical engineering* of societies.<sup>4</sup> More specifically, it will describe some of the ways in which creative formalizations of mathematical networks blend with philosophical and social-theoretical ideas about language, meaning, and cognition to produce the techniques of protocol, algorithm, and interface that make social computing possible. The idea here is that it is only by engaging with the technology across these multiple registers that will we be able to properly come to grips with our collective anxieties around the rise of social machines, and their future role in our lives.

In part because Hendler and Berners-Lee’s notion of the global graph now travels under a variety of different names—social graph, knowledge graph, enterprise graph, taste graph, and others besides—those outside of computer science may not yet be especially familiar with the term. But most certainly will have a sense of how computer networks in general, and their global conglomeration into the Internet and Web, have reshaped Westernized life over the past half-century. We know that collaborations between diverse institutional actors—the US military, university research labs, and transnational corporations—were originally responsible for the physical infrastructure of the Internet. Baseline principles for packet-switched networks, diffused into practice through these institutions, opened up the possibilities for social computing in the first place.<sup>5</sup> In the intervening decades, Berners-Lee’s

development of the Hypertext Transfer Protocol specification, and its global implementation through organizations like the World Wide Web Consortium, slowly layered more human-centric, semantic protocols over top of these original network transport protocols. Built on top of sophisticated strategies for machine-to-machine data exchange in the original Internet, the World Wide Web enabled a subsequent flourishing of human-to-human communication and knowledge exchange. Where the Transmission Control Protocol/Internet Protocol and the Domain Name System organized data packets and destination servers at the level of transport, in today's social web of platforms, emphasis continues to shift toward circulating networks of *content-objects* and *named data*. Global graphs are the conceptual basis upon which this has occurred.

Along the way, networks have gone from being a specialized topic for telecoms engineers and computer scientists to become a wholesale social imaginary. Global hardware and software networks have substantially reconfigured the conditions of cultural production, while also deeply altering the distributive relays between and within state economies. Network science has restructured knowledge practices across academia and is reshaping life in urban centers through its application to traffic flows, crime, economic risk, and other forms of population management. In a more intimate register, teens and tweens unwittingly make sense of their protean identities according to global graph-based scores of 'relevance', computed on social media platforms. All of these developments have further cemented the Internet's centrality as a communications infrastructure. Where 20 years ago the dominant paradigm was the retrieval of a simple web page, today's circulating units in social computing are much more likely to represent the world in terms of named software-objects that correspond to *things* and *people* in the world, conceptually linked together through the representational networks of global graphs.

A basic effect is that our manipulation of data has moved into a 'post-documentary' phase, taking on a much more entity- or object-oriented quality.<sup>6</sup> And it is here that we can start to better understand the deeper significance of Hendler and Berners-Lee's ideas about social machines and global graphs. Merging the technical capacities of networks with their epistemological potential, we now speak less of interconnected pages than of interconnected, structured, or linked data-objects. Whether at work, in scientific practice, or in support of interpersonal relations, these post-documentary-objects are modeling the epistemic and communicative relations between social actors, actions, and concepts at a much finer-grained level of detail. As Berners-Lee described it early on,

The Net and the Web may both be shaped as something mathematicians call a Graph, but they are at different levels. The Net links computers, the Web links documents. Now, people are making another mental move. There is realization now, 'It's not the documents,

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it is the things they are about which are important'. Obvious, really. Biologists are interested in proteins, drugs, genes. Businesspeople are interested in customers, products, sales. We are all interested in friends, family, colleagues, and acquaintances.<sup>7</sup>

Beyond any device, platform, or programming language then, the central power of today's social computing platforms is to be building out from the Internet's original network structures, to establish second- and third-order foundations for the efficient, collective manipulation of knowledge, expression, and, most importantly, interrelationship through distributed naming strategies that follow a network form. The consequences of this are hinted at when the information architect Andrew Hinton writes, for example, that,

The spirit of the hyperlink means everything can be connected out of context to everything else. We can link enterprise resource management platforms with loading docks, map software with automobiles, and radio frequency ID (RFID) chips injected into pet dogs that include the dog's records in licensing databases.<sup>8</sup>

All of these developments are provoking new forms of communication—and new possibilities for social *reasoning*—as humans and machines become enmeshed together in an increasingly subtle, socio-semantic register of use.

If we accept this admittedly caricatured, big picture view of digital networks as they've changed over time, then it is also important to consider how the role of the *user* has evolved alongside it. Thinking around how to define the user can be divided into roughly three overlapping eras, which have seen HCI variously as (1) information processing, (2) the initiative of agents pursuing projects, and (3) socially and materially embedded in rich contexts.<sup>9</sup> HCI design sees each of these eras as a "convergence of scientific opportunity and application need" that is broadly motivated along two lines of inquiry.<sup>10</sup> With every technological innovation, designers and developers grapple with pragmatic issues conceived in light of the specific requirements of a given system. They ask empirically minded questions, like what's the most effective or optimal approach to help a user achieve their goals? How does one algorithmic technique offer better results than another? Should decisions about a system compel users to adapt to certain kinds of designed behavior in a 'top-down' way, or should users themselves be setting the agenda of an evolving design?

Researchers and practitioners who follow these lines of inquiry understand their work primarily in terms of testing and iterating an application through social-scientific experimentation. Strong correlation between economic profitability and a platform's uptake by large numbers

of users means that innovation and optimization in this evidence-based way can become an intense and ongoing concern. Whether architecting an entire operating system through peer production, like Linux, or more commercially in the case of an app or platform like Gmail, developers rely heavily on users in the wild to steer the ongoing development of their systems. This dynamic of social computing design is often captured by the tongue-in-cheek moniker of a service being in ‘perpetual beta’; constantly testing, tweaking, and improving software in response to user input, designers wind up defining the user as part research subject and part co-developer.

But another mode of inquiry around the user brackets this intensely pragmatic approach of “realized instrumentality”<sup>11</sup> to ask after the user more philosophically, as a subject. With an ear to ongoing debates in cognitive science, philosophy, and social theory, research in this vein asks a different set of questions: as a matter of disciplinary commitment and a societal ethics of design, how should we approach the conceptual relationship between user and system in general? Should it be in terms of a scientific model of cognition, or more ethnologically as an individual working in a cultural context? Under what ontological terms of reference should we define, enable, and constrain user capacity, and how might these definitions need to change over time as they reflexively circulate between users and designers?<sup>12</sup> Working toward deeper and more generalizable assumptions about the user in this way punctuates the fields of HCI and IS design over the long term, inevitably provoking tensions and debates between paradigms. The latter have developed in the past out of such diverse disciplinary perspectives as cognitive science, semiotics, ethnomethodology, phenomenology, economics, critical theory, the philosophy of science, and science and technology studies.

Given the field’s aforementioned focus on actual working systems though, any ideas imported from philosophy into technique will need to take stock of how such theories fit together with the material capacities of a computer. Formalization, as a semiotic moment of making-object, is at the very heart of this fitting together. Philosophy acts as a conceptual scaffold upon which human-computer and human-human relations in software may be theorized; but any isomorphic relation claimed between computers and the user as philosophical subject will need to be carefully articulated to the logical structures of software. Again, at one time or another, empiricist, cognitive, phenomenological, economic, sociolinguistic, and affective conceptualizations of the user have achieved this fit, taking IS in new and different directions, even while still hewing to the basic material constraints of computing through their formalizing procedures.

Between these two modes of inquiry—steady empirical experimentation with ongoing systems and more speculative, but still materially grounded, debates concerning the deeper philosophical roots of the

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user—discussion here will fall mostly into the second mode. Straddling a disciplinary boundary between IS theory and critical-materialist digital media studies, which intriguingly seems to be becoming more porous by the year, the book is frankly concerned with elaborations of the user as philosophical subject. To be more specific, it is my hope that the book will contribute to ongoing debates around the conceptual foundations of social computing and global graphs from a media studies perspective by critically engaging with their formalizing approaches in terms of what Michel Foucault called modes and mechanisms of ‘subjectification’.<sup>13</sup>

It may help to pose a few rhetorical questions that gesture to the book’s overall framing on these terms: how do philosophical theories of the subject structure informational processes at both the level of interface and system design, to produce the collectivizing and individualizing functions that we come to call ‘social’? As I have been suggesting, if the subject is somehow now being ‘objectivized’ differently following a turn to global graphs, then which elements of thinking, communication, and creativity are being foregrounded, and which remain latent or obscure? How should we understand these formalizing moments I have begun to describe as conjoined to wider political and economic processes and projects, expressed in the increasing promotion and adoption of social computing platforms across societies? And ultimately, if a desirable goal is to foster greater public control over this type of technology, so that it might better function as a more frankly political platform for global collective judgment—something we can firmly say that it both does and fails to do—then how might representational and formalizing strategies need to change? From where would we draw philosophical impetus in support of such changes? These are some of the book’s main motivating concerns.

### Defining a Formatted Subject

To capture the particular space of ideas I have in mind, in place of ‘user’, I will be adopting the term *formatted subject*. When something is formatted, it is structured by design to elicit reliable routine functioning and an assured effectivity. But it is not just our information or data-objects that are being formatted; the promise of social computing is also about a smooth interoperability between ourselves and the world in our practices, as we accede to being formatted across a variety of socio-technical assemblages. In other words, embracing the representational strategies of social computing means that worlds, things, and people will be *formed by them*. Our affects, dispositions, identities, and interactions will receive structure as their semiotic content, as the platforms promise in return to help us manage everyday relations in a context of social action.

These relations and interactions are most typically framed in terms of heading off ‘information overload’, setting the conceptual stage to

be about social computing, making our lives more convenient, efficient, and effective. Organizational studies management and decision sciences, and process optimization represent more specialized but important points of reference here, which further frame the subject as related to processes of modern bureaucracy, business administration, and knowledge management. But I will not be focusing on these literatures, and will instead be looking more exclusively at the formatted subject in terms of its operational, semiotic relation to the information technology itself. My rationale is media-theoretical; to say that it is at this operational level that social computing systems infrastructurally organize the production of meaning. Too often, this aspect tends to be understood in the functionalistic language of social systems theory, where people are portrayed as individual elements of a system that draw functional distinctions from its environment. My thinking is instead guided by critical approaches in materialist media and software studies, which treat IS and the wider contexts in which they participate in operational terms, but start from a much more cultural perspective.<sup>14</sup>

To take up just one of these authors, Mark Hansen's account can help to initially characterize the global graph techniques that I will be interrogating here. Thanks to an increasing reliance on algorithmic and statistical techniques for generating subject-object relations using networks, Hansen argues that shared symbolic reference between human beings is giving way to what he calls *machinic* reference. The 'feed-forward' circuits enabled by machine learning technologies, for example, increasingly structure subjectivity through what he calls the "indirect presentification of the operability of sensibility."<sup>15</sup> By this, he means that as network and social media systems increasingly structure our practical judgment in the everyday, they remain themselves "fundamentally opaque" to more traditional accounts of subjectivity based in the intentional grasping of a human being in a social context, because they operate below our threshold of perception and attention, at the level of high-speed calculation.<sup>16</sup> In a sense, the graph techniques examined in what follows will trace the trajectory of this development, as representation in social computing shifts from traditional epistemological interpretations of a subject with egocentric intentionality toward more 'post-positivist' techniques that format populations of people as bundles of signals, again, typically framed in terms of the functional reproduction of a system in its environment.

Besides developing operational formatting as a theme in this way, I follow a contemporary line of Foucauldian thinkers in software studies who are concerned with the relationship between the subject, computer technology, and power. I will, however, be relying more on the subsequent development of Foucault's ideas at the hands of Gilles Deleuze and Félix Guattari. In his theorization of power-knowledge apparatuses, one of Foucault's most powerful insights was to conceptualize subjectivity



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beyond its traditional definition as a structural consequence of ideological, economic, experiential, or linguistic-grammatical forces. For him, these forces were always present but circulated in a more capillary way, according to underlying *processes of individualization*. Power relations combine with communicative relations in the establishment of what he called the ‘finalized activities’ of power, like an educated populace or the production of goods in a workshop.<sup>17</sup> Individualization through a power relation was ambiguous for him in that it did not just involve a one-way relation of domination.

Rather, he wrote that

what defines a relationship of power is that it is a mode of action which does not act directly and immediately on others. Instead it acts upon their actions: an action upon an action, on existing actions or on those which may arise in the present or the future.<sup>18</sup>

Social computing platforms are an important contemporary site where such a power relationship is established. Insofar as design strategies motivate a philosophical approach to the subject by embedding certain precepts about agency and the communication of knowledge into software process, two terms emerge from Foucault’s work that will be relevant to understanding what I am getting at with my use of the term formatted subject: subjectivation and subjectification. If subjectivation concerns individuals becoming themselves in the crucible of life, through agonal relations that afford the possibility of achieving self-authority (the Greeks were Foucault’s archetype here), then subjectification involves the organization of those relations for the purposes of managing populations in a more stratified, or static, way, through a collective relation to self that is produced by some dominant knowledge relation.<sup>19</sup>

One way to understand the motivation of what follows then is a desire to measure the distance between subjectivation and subjectification when it comes to the major relational approaches to structured data and global graphs deployed in social computing. In his book on Foucault, Deleuze writes that subjectification on the one hand “involves being ‘subject to someone else by control and dependence’, with all the processes of individuation and modulation which power installs, acting on the daily life and the interiority of those it calls its subjects.”<sup>20</sup> On the other, it makes the subject “‘tied to his own identity by a conscience or self-knowledge’, through all the techniques of moral and human sciences that go to make up a knowledge of the subject.”<sup>21</sup> These features of Foucault’s work form an important basis upon which I want to analyze the representational techniques at work in social computing. With subjectivation serving as a desirable, more open comparative ideal to forms of subjectification, the terms together refer to how power operates through the production of subjectivity, according to what Foucault called ‘governmentality’, or the conduct of conduct.

Subjectivation and subjectification are helpful to understand our relationship to social computing in two ways. First, as we bring the technology's totalizing and individualizing functions further into social relations at work, at home, and in the circulation of public ideas, social computing platforms are becoming a de facto means for the 'government of all and of each'. Second, social computing is a governmental technology in that it achieves this totalizing functionality under the declared terms of free agency. Through their interactive affordances, services like Twitter, Google, and Facebook become representational mechanisms for political and economic sovereignty, and are often held up as such, as an important universal means for both making a living and 'having a voice'. Analogous to Colin Gordon's explanation of governmentality, their technical power lies in taking "freedom itself and the 'soul of the citizen', the life and life-conduct of the ethically free subject, as in some sense the correlative-object of its own suasive capacity."<sup>22</sup>

In a passage that should resonate with our basic sense of social computing's power to continuously feed back upon collective interests, steering us toward and away from information-objects, ideas, and one another, Foucault writes that "to 'conduct' is at the same time to 'lead' others (according to mechanisms of coercion which are, to varying degrees, strict) and a way of behaving within a more or less open field of possibilities."<sup>23</sup> Keeping all of these ideas in mind, I therefore want the term formatted subject to denote the technical effect of a structuring, subjectifying nexus, developed at the level of code and semiotic technique, and intellectually justified according to some account of the subject-object relation in philosophy, which has also somehow been operationally aligned to the quantification of meaning as *information*.

Through combinations of interface, protocol, and algorithm, the formatted subject develops first and foremost on the basis of some form of objectivity, but one that will inevitably come to also define a relation for conducting oneself in the world as it gets taken up into collective practice. Today, we define this relation much too generically in terms of *information retrieval*; as we shall see, underneath the metaphor of retrieval lies a set of deeper relationalities that have been structured at different points by rationalist, phenomenological, linguistic, and ethnomethodological theories of the sign at the level of interface, as well as more epistemically and economically styled theories of meaningful agency at the level of protocol and algorithm. To put it in a way that observes our basic intuitions about the difference between interface and program, or 'front end' and 'back end', philosophical notions of an interpretive, embodied, and affective subject typically inform interface design strategies in rich ways; but following the material necessities of computation, these also hook up to more formalized techniques for staging agency and system reproduction at the level of information processing. The latter tend toward more functionalistic accounts of the subject, relying on positivist social science, economics, and other fields that use statistics and mathematics to model populations.

To borrow Hansen's terminology, it is these two sides that come together to "indirectly presentify" an operation of sensibility, by guiding communicative conduct through a governmental relation that frames our experience of and through the technology. To anticipate the book's conclusion, in the final chapter, I come to rely on work by the philosopher of technology Gilbert Simondon, as offering a way to think through how the sides might start to be reconceived, in terms of an ideal for what Guattari would call a transversal 'subjectivation'. For now, let us just say that any formatted subject can be produced only according to some relational distinction between entitative or referential signs that point to people, things, and events in knowledge representation (KR), and a free relation to self-action and expression, coupled together in what Hansen calls a 'system-environment hybrid'.<sup>24</sup>

Taking on board the productive ways in which social theories—including the social construction of technology, symbolic interactionism, phenomenological sociology, ethnomethodology, and the sociology of knowledge—have shaped the conversation in social computing around the production of such hybrids, it is also important to look beyond dominant approaches. In asking what Foucault, Deleuze, and Guattari have to tell us about social computing as a medium, the counterintuitive gambit here is that there are theoretical gains to be had by setting aside sociological approaches to social computing. Asking after alternatives in what follows, humanistic and sociologically based theories of the subject figure in the discussion, but most often as a contrasting foil to a less warm-blooded perspective, to which I now turn.

## **Semiosis and the Constitution of the Social**

Acknowledging the centrality of intersubjectivity and constructionist thinking in so many theories of the social, the approach taken here will be less humanistic and more impersonally processual. In both their separate and collaborative works, Deleuze and Guattari sought to destabilize our understanding of a traditional reasoning subject holding sway over the world through linguistic signification by prioritizing the connections between matter, form, and organizational structure that produce linguistically framed signs in the first place. For them, life's immanent field of forces resolves into meaningful subject-object relations only according to the ways in which power transects and organizes them into stable significance. Their emphasis on the constitution of subjectivity on these terms offers a compelling counter-narrative to the ways that we typically think about our relationship to social computing. The account that follows will rely heavily on Deleuze and Guattari's understanding of signs as a way of recalibrating our sense of the social: away from intersubjectivity as a natural or assumed ground and toward the

more elementary, material-semiotic patternings of nature and life, including the role that signs play with respect to habit and desire.

Linguistically focused accounts of signification typically ground our relation to the world in terms of consensus over semantics, reproduced and coordinated according to the shifting social circumstances of a community of speakers embedded, as Ludwig Wittgenstein famously described, in language games. As Deleuze and Guattari see it, this seemingly commonsensical approach winds up too quickly conforming the pragmatics of signs to intersubjective recognition, at the expense of understanding how the nondiscursive, transformative elements of a particular material-semiotic system might *also* significantly structure language use. In their lingo, Deleuze and Guattari instead place an emphasis on the effects of the wider *collective assemblages of enunciation* in which a sign manifests, arguing that these effects, multiply discursive and materially incorporeal, are just as important as any sign's uptake by speakers and hearers in a community. For a variety of historical and technical reasons to do with how information theory came to intersect with views of social communication—most famously in Warren Weaver's reconfiguration of Claude Shannon's work on information to 'reinsert' human beings into engineering accounts of communication—software design theory continues to focus too heavily on rules and consensus around symbols.<sup>25</sup>

Intersubjective pragmatics are clearly at work in the IS design literature when Clarisse de Souza proposes, for example, that "The encoding of both the problem situation and the corresponding solutions is fundamentally linguistic (i.e., based on a system of symbols—verbal, visual, aural, or other—that can be interpreted by consistent semantic rules)."<sup>26</sup> For Deleuze and Guattari, the problem with anticipating the pragmatics of signs in this manner is that it cements a kind of linguistic psychologism. When signs get preemptively accounted for in the universalized manner of their already being given in individual minds as *reference*, simultaneously, problems of difference—between ideas, circumstances, individuals, and systems—wind up defined in terms of a distinction between opinion and knowledge, in the consensual matching of causal means to ends among subjects. The pragmatic achievement, but also the overriding assumption, becomes one of signs conceived as already-formed *units*, 'transmitted' between minds as a kind of epistemic or social substance. Specific to documentation and IS, Ronald E. Day diagnoses the general approach as perpetually suffering from an overly simplified "conduit metaphor."<sup>27</sup>

It's important to gainsay this criticism against the fact that semiotic engineering strategies are also influenced by phenomenology, which sees embodied experience as wrapped up with language, in a more fundamental ground for sign relations. Phenomenologists conceive of signs less