การศึกษาปรัชญาเทคโนโลยีสารสนเทศในยุคสารสนเทศ เพื่อสร้างปรากฏการณ์วิทยาทางสารสนเทศ

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บทคัดย่อ

บทความนี้มีวัตถุประสงค์เพื่อทบทวนขอบเขตของแนวคิดเชิงปรัชญาสมัยใหม่ โดยเฉพาะในแง่มุมของความก้าวหน้าทางเทคโนโลยีและการสื่อสารในยุคปัจจุบัน นำเสนอแนวคิดปรัชญาตะวันตกร่วมสมัยโดยมีปรัชญาเชิงวิเคราะห์ หรือปรัชญาภาคพื้นทวีปเป็นพื้นฐาน ศึกษาการพัฒนาทางเทคโนโลยีสารสนเทศที่เกี่ยวข้องในสองลักษณะดังกล่าว รวมทั้งปรัชญาแห่งการสื่อสาร และให้ความสำคัญกับทฤษฎีต่างๆ ที่มีรากฐานปรัชญาภาคพื้นทวีป

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Toward a Phenomenology of Information: Philosophical Engagements with Information Technology in the Information Age

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Abstract

This article intends to review some strains of modern philosophy which more directly address the acceleration and proliferation of technology and communications in recent times. The author presents contemporary western philosophical approaches, broadly, as fundamentally Analytic or Continental. The author then explores certain developments relating to information technology within the two, including the Philosophy of Information, and, in greater depth, various theories rooted in the Continental tradition.

Keywords: information technology; Continental philosophy; Phenomenology; Analytic philosophy; poststructuralism; Philosophy of Information; Phenomenology of Information

Introduction

> Back in the 1940s the world was not an information world- information technology was yet to be really conceived; the information age wasn't there. And the idea of digitally representing things and representing things with bits really wasn't understood.
> - Lucky Shannon, Telcordia Technologies. (UCTV, 2008)

In 1948, Claude Shannon, a mathematician who hailed from a small hometown very near to my own, published a paper that has changed the course of human history. Said paper would come to earn him the moniker "Father of the Information Age." This is because Shannon established a theoretical framework for lossless, binary transmittance of data. By extension and application, and in less than 50 years' time, this concept spawned the information age, wherein information is incessantly encoded, stored, and transmitted as binary data. The relevance of these phenomena is self-evident today, for instance, in the strong likelihood that the reader of this very document will be reading a digitally encoded and transmitted set of bits that represent my thoughts and intended communications. Tracing the effects of this new method of storing and transmitting data, we find them all-encapsulating. Visual, aural, lingual, and conceptual information now exists as much in bits as in brains.

Humankind's transition into an age of information has not gone unnoticed by any self-reflective human science. Psychologists, sociologists, economists, political scientists, and philosophers alike are rightfully compelled to examine the causes, impacts, and implications of phenomena surrounding the advent of the Internet and of light-speed, trans-global communications in the world at its

current stage of biological and technological development. Philosophers in particular must necessarily concern themselves with communication, with the nature of the medium and context where communication takes place, as well as the substance or content of the message. Technological revolutions, then, in computing and communications, can be examined from a great number of aspects and philosophy's legacy of theory and concepts applied in many and varied ways.

Modern Communication: Technology and Discourse

Contemporary philosophers fail to engage with concepts of information and technology (and the now commonly understood compound of the two, information technology) at their peril, for these are becoming increasingly elemental to the lives and minds of people today. From language to metaphysics, political science to psychology, no field remains untouched by its technological and communicational contexts. The methods and media by which humans transfer and record information are persistently paramount concerns and objects for study in our efforts to understand the driving mechanisms behind our physical and psychic universes. And indeed, it is difficult to frame any useful or relevant description of the human condition without reference to these two concepts. They have permeated our communication methods and become ever-more important grounds for debates and ongoing investigations into language and abstraction in general. Such investigations have become varied and diverse.

This article intends to review some strains of modern philosophy which more directly address the phenomena of acceleration and proliferation of technology and communications in recent times. I

also note where various movements seem to have reached different points of impasse, convergence, or divergence. The primary focus is to examine which philosophical approaches have most directly and comprehensively engaged with the concepts of information and technology in their discourse and development. Finally, information technology is considered as a compound phrase and key element in the continuing pursuit of a Phenomenology of Information.

In the course of this brief survey of philosophical literature surrounding the concept of information technology, I am simultaneously making two broader arguments: (1) that analytical approaches have reached the ultimate limits of their own frameworks, and are now necessarily confined within them; and (2) that phenomenological (Continental) approaches are uniquely situated to extend and complement analytical enquiries, to show how information technology is interacting with society, history, and consciousness.

Analytical and Continental Philosophy: Underview

Contemporary western philosophy is commonly divided into two movements, analytical and continental. This classification is not without its nuances (and detractors, see Glock, 2008), but is occasionally useful in understanding the theoretical foundations of contemporary western thinkers.

Briefly, the divide emerged after World War II and was the result of a significant difference perceived by a group of thinkers. The difference is and was based on which ideas from the history of philosophy are adopted and extended with the most emphasis. The "analytic/ continental dichotomy"[1] describes two groups of philosophers, roughly,

[1] Blattner provides an informal but substantive discussion of this concept at http://faculty.georgetown.edu/blattnew/contanalytic.html

one emerging from historical roots emphasizing empiricism and logic (Schwarz, 2012); the other from German Idealism, and particular responses to various critiques of social and political issues during the 19th century (Leiter & Rosen, 2012).

The Analytic school of philosophy has been most successful in maintaining a cohesive and pervading presence in most philosophy departments. The legacy of Bertrand Russell, the great British empiricist, lives on. Continental philosophy remains a field of study, but casual observation suggests that the effects of this school of philosophy are more pronounced in other fields. Deconstructionist theories of language, gender, and politics appear consistently in ongoing studies of the humanities and social sciences. Many new methodologies and intellectual movements acknowledge contributions from the continental tradition (Leiter & Rosen, 2012). In philosophy proper it is maintained that the clearest distinction is one really of style. Leiter and Rosen note that this difference is observed to be that "analytic philosophy is careful, rigorous, and clear; Continental philosophy is not" (p. 2). As in the controversial case of Hegel, one might say that the motion of his reasoning is suspect. It moves from human experience, culture, and history toward first premises as much as in the other direction.

1. An Analytical Approach: Philosophy of Information

Analytic philosophers seemed to have been spurred into a deeper investigation of technology by the famous Turing test (1950), and the attendant developments in the field of artificial intelligence (Sloman, 1978). Outside the field of artificial intelligence (and its close relationship with philosophy of mind), however, technology and computation were primarily considered scientific subjects. An identifiable

"Philosophy of Information" was as yet "premature" and "transdisciplinary," and did not materialize as a field proper until the 1980s (Floridi, 2002).

In *Two Approaches to the Philosophy of Information*, Floridi sets a fundamentally analytic foundation for philosophical engagements with information. Although he distinguishes between two approaches, calling one "analytical" and the other "metaphysical," the latter approach relies mostly on semantic and conceptual borrowings from particular German idealists.

> *Personally, I have privileged the more "analytic" interpretation when presenting PI metatheoretically (Floridi [2002]), hoping to capture in this way the minimal common ground shared by many different philosophers working in this new area (Floridi [2003a]). But I have privileged the "metaphysical" interpretation when doing PI (e.g. Floridi [2003b]) the way I understand it, that is, as a constructionist enterprise. Both approaches are normative and perfectly compatible.* (Floridi, 2003, p. 465)

Though he makes occasional reference to various continental theorists, this sort of distinction remains constant in his work. He is either doing conventional contemporary analytical and semantical analyses, or he is relating classical philosophical positions (those of, e.g., Plato, Wittgenstein, Nietzsche, Heidegger, Husserl, Hegel, etc.) to the current state of information technology and society. I should prefer to call his latter approach "neo-classical," rather than "metaphysical." In a recent dissertation heavily relying on Philosophy of Information as a theoretical framework, Søe defines it as "specifically the intersection between information studies and analytical philosophy" (2016, p. 33).

As for metaphysics, Bostrom more directly and succinctly sets

out the issues analytically in a 2012 paper, in which he reasons out the significant possibility that the universe as we know it is in reality a simulation running on an advanced, future-world computing device. This could perhaps present the end-game for analytical and metaphysical approaches alike. That is, we might argue that an analytical approach makes a compelling case that what we conceive as information and what we perceive as the material world may be metaphysically equivalent. This, indeed, could be considered an important discovery.

While recent philosophical explorations of information and technology do well at creating and testing propositions which are carefully constructed with regards to formal logic, semantics, and metaphysics, it seems to have been left to other fields (psychology, sociology, language studies, etc) to examine information technology as a historical-cultural phenomenon. Such an inquiry is suggested as a relevant aim of contemporary philosophy by Delanda (cf. Kouw, 2012), as a complementary theoretical branch to philosophy of science. Indeed, studies more and more often are given to suggest that society itself now revolves around the continuing development of information technology (Webster, 1994). If Floridi's work in collecting various contemporary philosophical engagements with information technology is representative of a significant movement in analytic philosophy—a paradigm shift, as he claims—what developments and potential directions characterize a continental approach?

2. Phenomenology of Information

As Husserl observed, philosophical inquiries are fundamentally altered by how they approach subject/object relationships. By remaining open to this question, and if we are further open to

phenomenological methods, it may increase our knowledge of the forces and mechanisms at play as culture becomes Internet culture, and society becomes information society. On the question of information technology, it may bring a more illuminating understanding of the flows and exchanges, the interaction, as opposed to hollow demonstrations of object-equivalence sans subject. For undoubtedly all phenomena surrounding information technology are acts of communication and exchange.

References to a "phenomenology of information" begin to emerge in scholarly literature in the middle of the 1990s. Nunberg (1996) presents some of the preliminary issues in drafting a coherent phenomenology of information. His concerns, however, appear limited to questions of authorship and publishing, and he concludes that "still, it is unfair to expect electronic media to be the agents of sweeping social revolution or even for that matter of a complete overturning of the present order of discourse" (p. 133). Along with Poster's later work (section 3.1), occurring during the birth and infancy of Internet culture, Nunberg seems hesitant to position information technology in direct relation with identity construction and cultural exchanges. Faucher's (section 3.2.1) keen attention to information comes at the cost of his treatment of technology, so that in considering information technology, he mistakes the forest for the trees. Overall, information technology has yet to be adequately analyzed and integrated with any phenomenology of information.

Phenomenological methods are regularly employed, however, to fill in some of the perceived gaps left by analytical investigations rooted in objectification. Frohman (2004) employs Nunberg's phenomenological observations to propose a "philosophy of documentation" which he asserts to be prerequisite to a philosophy

of information, and more carefully integrated with a process of documentation which is to be understood phenomenologically. This is updated and extended upon in Gorichanaz and Latham's "phenomenology of documentation" (2016). Mingers and Willcocks collected a number of the past decade's works concerning information systems analysis that is informed by continental theory and practice, published in the same year.

Although phenomenological methods are regularly being applied in the study of emergent phenomena related to information technologies, a coherent and comprehensive phenomenology of information has yet to be pursued by any modern thinker. For the remainder of this paper, I will highlight some of the works by thinkers in the Continental tradition which I believe suggest the potential for such a unifying theory, and map much of the requisite theoretical frameworks.

3. Continental Approaches to Engagement: Technology, Culture, and Society

> *Everywhere we remain unfree and chained to technology, whether we passionately affirm or deny it. But we are delivered over to it in the worst possible way when we regard it as something neutral; for this conception of it, to which today we particularly like to do homage, makes us utterly blind to the essence of technology.*
> (Heidegger, 1954, p. 99)

Heidegger's 1954 essay on the question of technology provides a good basis for how the subject might be approached in the Continental tradition. He also articulates the aforementioned point of

distinction between the Continental tradition and the Analytic, in suggesting that we ought "not to fix our attention on isolated sentences and topics" (99).

As the fields of engineering and computing have been accompanied by complementary works from analytical philosophers, continental philosophers began from investigations of consciousness, and by extension endeavored to develop theories of ideology pertaining to culture and politics. So as computers developed, along with notions of artificial intelligence, continental or phenomenological approaches attempted to interpret technology in terms of its emergence, and in terms of human mediation. That is, to gain a deeper understanding of the human experience by exploring a dialectical cycle between conscious humans and the technologies they engineer and implement[2]. Contrasting with analytic approaches, which conceive of and investigate information as object, phenomenological approaches tend to begin with an investigation of the subject, the conscious being, and the reciprocal processes by which technology can both generate, and be generated by consciousness. So to what extent do continental theorists address and incorporate "the essence of technology"? In what respects are they considering information technology?

3.1 Archaeology of information

Intellectual movements which arrived in the wake of Hegel and Heidegger are a topic of discussion in themselves, quite beyond the intended scope of this paper. But two particular movements in

[2] Floridi's analysis of "The Dialectic of Reflection and the Emergence of PI" (2002) is primarily intended, it seems, to discredit a philosophical movement which he refuses to name.

greater European philosophy at that time were structuralism, which attempted to better define human institutions and systems and the patterns and mechanisms which describe interrelations, and post-structuralism, a less cohesive movement compiled from thinkers in response or critique to structuralism. With respect to information, Foucault and other post-structuralists present challenges to conventional epistemological positions. Rather than defining it pragmatically, it is viewed as the medium of exchange. To explain this more fully, I willutilize a Foucauldian device, the episteme. Foucault dubbed 1971's The Order of Things an "archaeology of human sciences."[3] For Foucault, who was interested more perhaps in sketching systems of thought than in fully explicating their bearing on individual human consciousness, the chosen objects and objectives for scientific research are presented as revelatory. Our understanding of science, and therefore of knowledge, must be understood contextually with a paradigmatic shift to a science which "is directed at positive knowledge of 'man'" (Behrent, 2013, p. 77). And whereas one approach may be to focus on information in terms of signal to noise ratio, efficiency, and other practical concerns, there remains much to be gained by examining it as an interactive process influenced and shaped by the institutions under which it is created. To accomplish this we must describe the limits and bounds of what can be expressed and encoded in what Poster refers to as the mode of information (1987). It is in this early work of Poster that he begins to analyze Foucault's epistemes, the culturally grounded mechanisms which generate representations for a consciousness, in the modern, digital age. If The Order of Things successfully justifies itself as a

[3] In the wider examination of Foucault, scholars have noted how this archaeological period preceded the genealogical period that followed.

reexamination of representation in philosophical paradigms, and one achievable at least in part through the study of language, Poster's various theses intend to extend this examination in order to integrate information technology:

> Electronic mediation heightens the "artificiality" of communication, extending to the ultimate degree the différance of writing. (p. 116)
>
> ...
>
> The theory of the mode of information must take into account the critiques of the representationality, intentionality and univocality of language that have developed in so many varieties in recent decades. (p. 118)[4]

Poster's allusions in the same piece to the modern subject as "a multiplicity of self constitutions" begins to show the potential of this extension. The qualities of information can be revealed in relation to the configuration of self constitutions in play.

3.1.1 Technologies of the self

In Marx's nineteenth century, it was perhaps sufficient to view technology within the sphere of the means of production. As technology evolved, however, so did continental theory. We see glimpses of this in Heidegger's later works, as well as in central themes in the works of other prominent continental theorists. In commenting on Foucault's intellectual position on technology, Behrent observes that he "never had much to say about ... technology in its broadest and most conventional sense" (2003, p. 55). Most of his works, like Heidegger's, were produced prior to the explosion of the

[4] Poster analyzes in the passages following some contributions from the field of semiotics, a field which unfortunately lays outside the scope of this paper.

Internet and instantaneous mass communication. He nevertheless seems to have forecast and foreshadowed the evolution of knowledge, communication, and power in the imminent information age. If Foucault hadn't much to say about technology in general, he nevertheless was able to show technology as differently and more significantly linked to human identity than is conventionally thought.

3.1.2 Identity construction and social networks

Foucault often mentioned "the history of the subject" (1978) as a guiding concern in his analyses—its origins and mechanisms. This collides often in his works with his particular uses of the notion of technology. His early work features the classically Marxist idea that certain mental illnesses could stem from "the sociological problem of alienation, which itself is a consequence of the [technological] mechanization of the world" (Behrent, 2003, p. 69). Through the middle period of his career, however, explicit references to technology are scant. Behrent claims this was a period of Foucault shedding Marxist humanist "baggage," so that in his later work,

> *the stage was set for Foucault's characteristic perspective on technology, in which deep skepticism about the application of technological principles to the management of society blends with a form of theoretical anti-humanism that, in certain circumstances, conceives human beings as analogous to technological phenomena.* (p. 74)

This "anti-humanist" theme can be found in a number of works of post-structural theory, which "conceptualiz[e] the human-machine relation in a posthumanist age" (Poster, 1994, p. 65). In Foucault, and particularly in his genealogy of institutions, this is expressed in his observation of "a close connection between the construction of 'man' as a positive object of knowledge and the emergence of a

'technical world'" (p. 77). And so despite the abandonment of the Marxist, humanist conception of technology, Foucault remained persistently concerned with the connections between technology and human notions of identity.

Lamb and Poster conclude with an admonition that modern humans be wary about "constructing our selves from the components made available through information and communication technologies" (2003, p. 14). However, just as Poster (2001) observes how Foucault "anticipated but did not recognize" the consequences and implications of new technologies for the relation of author to text, it seems that Poster and Lamb (2003) anticipate but fail to recognize the imminently near-total pervasion of virtual communities and digitally constructed identities in modern society. This idea, nevertheless, is anticipated in Poster's work as early as 1990.[5] Self-referencing over a decade later, Poster and Lamb warn of information technology (referred to therein as "information and communication technologies (ICTs)") leading to "more monitoring and self-monitoring behaviors."

3.1.3 Surveillance Revolutions

Simple observation of the world around us leads naturally to deeper philosophical questions about the evolution of our societies. Justice systems and institutions of authority are becoming more technocratic. Fees are assessed and evidence collected from motion-activated cameras and social media publications. Activists

[5] "The poststructuralist position illuminates the decentering effects of the electronically mediated communication on the subject and, reciprocally, the electronically mediated communication subverts the authority effects of the poststructuralist position by imposing the social context as a decentering ground for theory" (75).

maintain communications and are then prosecuted on the basis of information flows in Internet-based systems. The mode of information requires us to reevaluate core principles that guide our standards and practices in every aspect of life.

Another way Foucault's theories may be considered to anticipate, yet not realize a modern state of affairs is in his reexamination of Bentham's Panopticon. The original Panopticon was a kind of thought experiment about a perfect prison, one in which total surveillance of those imprisoned was possible. Until fairly recently, it lived on as much in dystopian science fiction and the conspiracy theories of paranoiacs as much as in philosophy. It held a special relevance for Foucault, however, who "specifically and repeatedly describes the Panopticon as a technology" (Behrent, 2003, p. 86). Meanwhile, information technology is quickly making a banal reality of Panopticism. Closed-circuit television (CCTV) surveillance, the proliferation of camera technologies and their ubiquitous use, as well as ever-increasing storage capacities for digital data have created a modern reality that is recorded and stored by an exponentially increasing amount of technology. The mass capture, transfer, and storage of data and metadata[6] has spawned a new "big data" industry that has developed around these practices. Poster's prophecy of "more monitoring and self-monitoring behaviors" appears to have been something of an understatement. Panopticism today might be seen to represent mass acceptance of a technology which

> is thus both a form of power that ‘produces’ individuals in ways that integrate them into political and economic structures by supervising, subjecting, and normalizing them, and a

[6] *i.e.* information about information—dates & times for sending & receiving, associated hardware unique identitiers, locations, etc.

> term that dispels the illusion of the 'the individual as abstract subject, defined by individual rights.' (p. 82)

Poster (1990) begins to recognize this panopticism in what he refers to as the "super-panopticon." And more notably, he remarks that "Foucault's discussion of the Panopticon leads directly into this theoretical line of inquiry, but falls short of taking the important next steps" (Poster, 1987, p. 129). The next step for Poster was examining the transition of media into a new phase which is less overtly hierarchical (2001).

3.2 Deterritorialization

The further extension of Foucauldian concepts into the new age of information technology saw initial development by Lamb and Poster in 2003, just as social networks began to blossom, who advised that "particular attention be paid to Internet infrastructures, their political dimensions and the nature of identity" (p. 14). This extension is achieved by way of Deleuze and his "socio-technological study of the mechanisms of control" (1992, p. 7). This begins to provide a framework to understand phenomena surrounding the rise of social networks and decentralized surveillance, the explosive emergence and development of which has been a flashpoint of fascination across disciplines. Using this framework to understand how technology is wedded to power, we might begin to understand how information technology becomes a locus of control for a system of power which "constitutes those over whom it exercises power into a body and molds the individuality of each member of that body" (Deleuze, 1992, p. 5). For Foucault's theories, this presented a kind of unresolved tension, a possible inconsistency amongst his uses of the

term technology (Behrent, 2003)[7] Deleuze and Guattari more directly confront this issue.

3.2.1 Deleuzian Information

Modern communications increasingly test the bounds of common, traditional, philosophical understanding. Binaries such as privacy/publicity and security/vulnerability[8] are no longer stable or descriptive. Neither, even, is mass/individual (Deleuze, 1992). Digital "components" which make up identity are themselves a multiplicity, a complex of codes and constructs. The documented, captured, stored data representing every conceivable detail of our lives are being continually generated, maintained, expanded, and transferred by a decentralized and intermittently networked body of technologies designed and/or used for this purpose, the purpose of representation and encoding. In some instances, information is stored in the network, but not the nodes.[9] Classical notions of hierarchies and identity, of the most basic methods for organizing sense-data and observing rational patterns, must be retraced. These ideas were proposed as both the core of a cultural theory and a discursive philosophical method by Deleuze and Guattari in *A Thousand Plateaus* (1988).

In common usage, a rhizome refers to a plant which grows

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[7] ...technologies of power and the self often overlap and support one another. Foucault's insight that power is productive (and not merely prohibitive) implies that in certain contexts, a technology of the self might well be an effect or a consequence of a power technology" (p. 90-91).

[8] See Pieters, W. (2011). The (social) construction of information security. *The Information Society, 27*(5), 326-335.

[9] This arises in parallel with critical observations from the fields of biology and behavioral science; see Doyle, M. J., & Marsh, L. (2013). Stigmergy 3.0: From ants to economies. *Cognitive Systems Research, 21*, 1-6.

horizontally, establishing new roots and branches as it spreads. An assemblage, in Deleuze's terms, refers to a combination of things[10] upon or through which a desire may be expressed. Rhizomatic knowledge structures appear increasingly significant as human consciousness becomes more machine-mediated, both metaphysically and epistemologically. This framework allows for a deeper and more contextualized understanding of information, as phenomenological encounters—exchanges of signs and articulations of social order. Information flows have expanded amidst a restructuring of communicative hierarchies. Thus our understanding of the information that is the currency and would-be object of information technology is multivalently interconnected with the phenomena of social order. The semantic trap around information, misinformation, and disinformation is not claimed as irrelevant (Weaver, 1949), nor deemed resolvable through definite descriptions (Karlova, 2010; Kollanyi, 2014; Søe, 2016). In fact, it is the encounter itself, which could be said to be informative, misinformative, deceptive, or any combination of these, which is to be the object of study. These exchanges are phenomenological, mediated. They emerge as a function of cultural and historical forces that are acting upon and being produced by the modern subject. The work of Foucault and Deleuze suggests that we should "displace a language founded on logocentric, hierarchically grounded truth and replace it with an unfounded play of anarchistic, contingent paralogies" (Moulthrop, 1994, p. 4).

Faucher (2013) provides a wide-ranging discussion on modern information in Metastasis and Metastability: A Deleuzian Approach to

[10] Also called "bodies." For a full discussion, see Patton, P. (1994). Metamorpho-Logic: Bodies and Powers in A Thousand Plateaus, Journal of the British Society for Phenomenology, 25:2, 157-169.

Information. The bulk of this work is devoted to investigating the ontological status of information. In the process, Faucher explores many of the same epistemological and metaphysical questions as this paper, and in far richer detail. And yet, in the titular chapter, the author is careful in his employment of the term "technology" and dances around its role in his analysis of information. Information technology is considered "part of discourse regimes that privilege technological humanism" (p. 32). This presumption is implicit in the author's every mention of technology throughout the work. In a subsequent discussion of technology, he muses on a "triad of information, matter, and energy [that] is a relation built on a tension every bit as much as they are interlocking 'components'" (p. 203), but does not attribute this relation to information technology. Thus, instead of considering information technology in a proper Deleuzian context, that is, as those assemblages engaged in the act of representation,[11] Faucher's otherwise well-conceived book concludes with a discussion of the incompatibility of the field of cybernetics with Deleuzian thought.

3.2.2 The surveillant assemblage

Faucher does intimate, in his closing remarks, that "the Web" may merit more attention in Deleuzian contexts. Meanwhile, other post-structuralist analyses have been undertaken, albeit under rather different premises. Information technologies and social networks figure heavily into discussions about surveillance and panopticism. Examinations of these topics frequently reference Foucault, as discussed above. Deleuzian theory has also contributed. Haggerty

[11] Conceptually this would include vocal chords, pencils, animal brains, quantum computers, etc.

and Ericson (2000) suggest the emergence of a "surveillant assemblage," and that it is rhizomatic in nature. With Elmer (2003), which relies on Deleuzian 'diagrammatics' to further evaluate panoptic theory in dehierarchialized systems, these works indicate how Deleuzian theories can be applied to modern surveillance phenomena.

4. Conclusion

The conceptual tools from the previous section are intended to exemplify some continental approaches to the question of information technology, and to briefly survey their underpinnings. Both elements of this phrase have been widely investigated by continental philosophers during the past 50 years, but a proper focus on the compound is not yet clear in the discourse. Phenomenological approaches—archaeologies, genealogies, hermeneutics, etc—can contribute unique perspectives, due to their potential focus on the role of information technologies as sites of dialectical mediation and exchange, as essences in the continued unfolding of human history and culture.

Since Turing famously asked whether machines can think, philosophy has been slowly turning to confront the ways in which human thought and human interactions were themselves machine-like. As frameworks and theories were updated in physics, following the revelation of demonstrable, yet never before realized physical and ontological connections between mass and energy, so did continental theory begin to attempt to reframe subject/object relations, maintaining and replacing the various frameworks through which we understand social and cultural phenomena. We came to perceive abstract machines, devoid of body, yet functioning in relation to apparently intelligent and subjective forces. A philosophy

of information, as it is currently being articulated in analytic philosophy, must complemented by a phenomenology of information, in order to understand the multiplicity of forces and powers influencing flows of information and the continual proliferation of its associated technologies. Let us not consider only the bits, but also the bots. The networks, users, and systems. The mode of information. It is by recognizing what is machine-like in nature, thought, and behavior that we might reveal broader mechanisms which govern these occurrences and becomings. For this reason it is imperative that we further develop our philosophical positions surrounding information technology, toward a more mature Phenomenology of Information, that we might better understand humankind's place, its trajectory, and perhaps even its destiny in the greater universe.

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