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Data, Ideology, and the Developing Critical Program of Social Informatics

Michael Marcinkowski

Abstract

The rapidly shifting ideological terrain of computing has a profound impact on Social Informatics's critical and empirical analysis of computerization movements. As these movements incorporate many of the past critiques concerning social fit and situational context levelled against them by Social Informatics research, more subtle and more deeply ingrained modes of ideological practice have risen to support movements of computerization. Among these, the current emphasis on the promises of data and data analytics presents the most obvious ideological challenge. In order to reorient Social Informatics in relation to these new ideological challenges, Louis Althusser's theory of ideology is discussed, with its implications for Social Informatics considered. Among these implications, a changed relationship between Social Informatics's critical stance and its reliance on empirical methods is advanced. Addressed at a fundamental level, the practice of Social Informatics comes to be reoriented in a more distinctly reflective and ethical direction.

Introduction

Critical appraisal of the ideological presuppositions surrounding movements of computerization has been a central concern in the work of Social Informatics for some time (Day, 2007; Elliott & Kraemer, 2008; Kling & Iacono, 1988, 1990). Such critique has contributed to the now-widespread acknowledgment of the relation between technical and social paradigms in the success or failure of the deployment of computer systems and other forms of information communication technology (ICT) (Ackerman, 2000; Norman, 2010; Sawyer & Jarrahi, 2014). Most often, these critiques focus on the social malformation of technical systems—malformations discounted or ignored in part because of the ideological enthusiasm for the sheer technical possibilities of a system and the seemingly universal claims made by computational technology (Day, 2007; Kling, 2000).

As Social Informatics and related approaches (Computer Supported Cooperative Work [CSCW], human-centered computing, etc.) have successfully pressed for understanding the social and technical aspects of ICT as an inseparable sociotechnical amalgam and thereby diffusing much of the ideological pressures of previous decades, new modes of ideological discourse have developed as proxy for these seemingly deflated forms. Where in the 1980s and 1990s the ideological

exhortation might have been a more general "you need a computer," the exhortation today is different. Although ideological and monolithic movements of personal computing have dissolved into a menagerie of different movements, each shaped by their own particular constitution and aims (Hara & Rosenbaum, 2008), there remains in the background of many of these movements a consideration of the possibilities and pitfalls of a more general concern for data, specifically its collection and analysis toward useful insight. Just as computerization could previously be touted as a central palliative to seemingly intractable problems, data analysis is now likewise presented as a catch-all solution to a host of complex issues (boyd & Crawford, 2012; Callebaut, 2012).

Even as the rhetoric has changed from basic computerization to data analysis, computerization nevertheless still remains at the center of the ideological bulwark now focused on the imperatives of data. Whereas previous regimes of computerization were critiqued based on the largely unfulfilled promise of the benefits and possibilities of computing (Kling, 2007; Kling & Iacono, 1988), today's emphasis on the benefits and possibilities of large sets of data (Mayer-Schönberger & Cukier, 2013) serves to both continue and replicate the ideological conditions of computerization under a different banner. From examples such as the quantified self for health (Murdoch & Detsky, 2013; Swan, 2009), to education (Long & Siemens, 2011; Picciano, 2012), to big data biology (Howe et al., 2008), to data-driven social science (Manovich, 2012), the prospects of data are presented in such a way (whether rightly or wrongly) that continues the ideological project supported by the original computerization movements that pressed for the unquestioned benefits of computerization in the workplace, school, and home (Kling & Iacono, 1988).

Within this complex ideological network of both computerization and data analytics, the Social Informatics-inspired questions of effect (Kling, 1991) and social-technical fit (Ackerman, 2000) are joined by more nuanced questions of the development of aims and reproduction of the initial conditions of computerization itself. Given this, it is necessary to expand on the kind of ideological diagnosis provided by Social Informatics and look more closely at the structured formations that produce and sustain the relationship between basic computerization and its current emphasis on the potential for data analysis. Relying on a conception of ideology developed in the work of Althusser (2001), this article will trace the implications of this shifting ideological terrain on the work of Social Informatics as it engages with movements of computerization. In doing so, the critical and empirical foundations of Social Informatics (Kling, 2007; Sawyer & Rosenbaum, 2000) will be evaluated.

Such a relationship between Social Informatics and the work of Althusser is not without precedent, as Rob Kling, in his foundational role in establishing the version of Social Informatics and ideologies of computerization discussed here, frequently acknowledged the influence of scholars engaged with the work of Althusser (such as Poster, 1974) (Cronin & Shaw, 2007; Day, 2007) and at times used what could be considered explicitly Althusserian terminology, speaking of "ideologies" of computing while performing "symptomatic readings" of the context surrounding such ideologies (Kling & Iacono, 1988, 1990), each term finding development in Althusser and Balibar's (2009; 2001) writings. In tracing these connections, it must be explicitly stated that the singular image of Social Informatics considered in this article is one which finds its identity at the confluence of Kling's interest in Social Informatics (2000, 2007) and computerization movements (Kling & Iacono, 1988, 1990)[1].

In an article that hopes to argue for some theoretical underpinning to Social Informatics, it should also be immediately highlighted that there are wide patches of agreement that Social Informatics is explicitly not a theory itself (Sawyer, 2006; Sawyer & Eschenfelder, 2005; Sawyer & Rosenbaum, 2000). This determination is made at the same time that Social Informatics is said to be hospitable to a number of theories (Lamb & Sawyer, 2005; Sawyer, 2006; Sawyer & Rosenbaum, 2000) and is able to sustain them within its bounds. That is, Social Informatics is conceived of as an area of research that is defined by what it studies and not by any particular theoretical orientation. However, as Kling (1980) noted early in the development of what came to be Social Informatics: "[t]o identify the social impacts of computing, one must have, at least implicitly, a theory of the causal powers that computerized systems can exert upon individuals, groups, organizations, institutions, social networks, social worlds, and other social entities" (p. 62). As will be argued, an explicit Althusserian theory of ideology provides at least part of such an implicit understanding of the relation between computing and social forms.

Centrally, the contribution of this article is to address and re-evaluate the fundamental philosophical basis of how Social Informatics might approach a critique of ideology today in light of the developing relationship between computerization and society. Building on established

[1] The question of the possibility of a singular analysis of a discipline as vast and multi-faceted as Social Informatics presents a distinct challenge, particularly when addressing it by way of a philosophical tradition (Althusser bridging the historical divide between structuralism and post- structuralism) which resists such easy individuation (Day, 2005). Here, even as a constrained consideration of Social Informatics's critical analysis of computerization movements is at stake, there remains the risk of some distorting totalization, though cognizance of this possibility contributes greatly to the avoidance of any insurmountable damage.

analysis of the implications of big data (boyd & Crawford, 2012; Callebaut, 2012; Floridi, 2012; etc.), the paradigmatic framing for Social Informatics's analysis of ideologies of computing is examined and re-oriented. As such, this work is cast as a fundamental and pre-methodological consideration of how the scientific work of Social Informatics is constituted. It analyzes the tacit and conceptual conditions that provide the basic forms and epistemic veracity for the work of Social Informatics's own methodological analysis of ideology in computing.

In mapping this new ideological terrain in which the possibilities of data come to overshadow any immediate ideologies of computation, two main thematic implications for Social Informatics will be drawn out. First, as already noted, is the possibility of using Althusser's theory of ideology as a philosophically grounded lens through which we can understand the ideological challenges faced by Social Informatics today. Second, in developing this theoretical framing for Social Informatics's approach to ideology, a central methodological claim of Social Informatics—that empirical investigations can provide insight into ideological discourses—will be examined and an alternate paradigm of critical theoretical practice will be considered. This comes as an expansion of the broadly critical foundations of Social Informatics have already been sketched out, albeit in different terms (Day, 2007), with similar implications. At bottom, the result is to cast Social Informatics as a mode of Althusserian theoretical practice, thus clarifying and expanding on the definition and possibilities for future Social Informatics research.

The Ideological Project of Social Informatics

Critical strains of Social Informatics were developed in the face of what were considered to be untested claims for the prospects and possibilities of computing that had been made by those both inside and outside of the field of computing (Kling, 1980, 2007; Kling & Iacono, 1988). As Kling saw it, the problem with these computer-centric "ideological" discourses was their lack of any empirically proven basis for their claims regarding the effect and effectiveness of certain applications of computing. It worked toward a critical analysis of the "'uncritical' statements and narratives divorced from 'empirical' reality" (Day, 2007, p.577) that were produced in support of computerization. In this, Social Informatics was conceived of as a means to push back against deterministic strains of thought that were initially pervasive in the widespread adoption of computers (Kling, 2000) and emphasize the historically situated nature of any claims made about computing.

Having achieved more than a small measure of success and faced with new and more pervasive questions about computing, Social Informatics seems to now be in the process of outgrowing its initial formulation with its widening range of discussions and interventions. Despite (or perhaps because of) a string of published definitions and redefinitions (Kling, 2007; Lamb & Sawyer, 2005; Sawyer, 2006; Sawyer & Eschenfelder, 2005; Sawyer & Jarrahi, 2014; Sawyer & Rosenbaum, 2000; Sawyer & Tapia, 2007; Sawyer & Tyworth, 2006), Social Informatics faces a wide array of interpretations of what it is as a practice, and how it should be defined. Indeed, many discussions (Bradley, 2006; Day, 2007) begin to press against the decidedly empirical origins of Social Informatics's critique of ideology and raise new questions about how the field should operate in light of its own self-definition and goals.

Despite this ambiguity in definition and method, one central theme of Social Informatics can be traced to a particular concern over the way we understood and were compelled by various "computerization movements" (Elliott & Kraemer, 2008; Kling & Iacono, 1988, 1990). As Kling and Iacono (1988) put it in their initial formulation: "[o]ur main thesis is that computerization movements communicate key ideological beliefs about the links between computerization and a preferred social order that helps legitimize computerization for many potential adopters" (p. 227). Looking back from the present to 1988 when this thesis was put forward makes such a statement seem both prophetic and quaint. The ideologies supporting the adoption of computation in various sectors seems to have been so successful that the question of computerization and social order is no longer a legitimate question: Computerization, the social order, and the ideologies that support a connection between the two have largely converged. In contrast to 1988, computerization has become the default stance even beyond the kind of fundamental areas of the computerization movements initially examined by Kling and Iacono (1988) (urban planning, artificial intelligence, education, office automation, and personal computing), spreading to agriculture (Wang, Zhang, & Wang, 2006), health (Bath, 2008), and even literature (Clement, 2008) and beyond.

At the same time, thanks in part to work done under the banner of Social Informatics, the colonization of areas of human activity by computerization has not been an asymmetrical movement. The call pressed forward by Social Informatics and related fields to include a consideration of the lived, social, and historically motivated conditions surrounding computer use as part of the incorporation of computing into such a variety of human tasks has not been ignored. If anything, the critiques offered by Social Informatics have given the proponents of an ideological

picture of computing recourse when confronted with the breakdown of the optimistic vision of computing on which they relied (Kling, 2007). Instead of being presented as a default and immediate palliative in any situation, computerization is now understood as being reliant on a concern for the social and human forms with which it interacts. Indeed, forms of computerization have taken on many of the organizing principles of our social existences (think of social networking [Weaver & Morrison, 2008] or ubiquitous computing [Ackerman, 2008], with each case being founded on basic ideas of human social organization). The ideological logic of the "links between computerization and a preferred social order" (Kling & Iacono, 1988, p. 227) has been tempered, though not relinquished entirely.

In many respects, despite this overarching sense of mutual convergence and the evidence that the warnings of Social Informatics have been taken to heart, the present state is such that the initial ideologies of computerization critiqued in Social Informatics have, to put it in blunt and somewhat overstated terms, won. The value of computerization is no longer questioned in the same manner as it was at the advent of Social Informatics (as a question of whether there should be more or less computerization in any given setting [Kling, 2007]). Although the question of how computer systems and ICT should be designed and deployed with respect to social forms is important today in a manner inconceivable at the outset of Social Informatics, equally inconceivable today is the question of whether computer systems should be used for any number of tasks. The answer is, of course, a resounding "yes." Ideologies of computerization as critiqued by Social Informatics have incorporated the call for attention to social factors, while still succeeding to "legitimize computerization for many potential adopters"(Kling & Iacono, 1988, p. 227).

This sublimation by movements of computerization of a critique of their ideological stance as rendered by Social Informatics (and other fields) can be understood in terms of both a positive development (Social Informatics has achieved some measure of success) and as a mode of hegemonic allowance (ideologies of computerization assented to certain considerations of existing social forms as a means toward the furtherance of their own goals). This symbiotic state of affairs does not mean that the work of Social Informatics is complete or relegated to a virtual holding pattern. As the critique developed by Social Informatics and related disciplines has demonstrated, computerization is not a foregone conclusion able to sustain itself only on its own terms: within the ideological stance of computerization movements today exists this sublimated kernel of social, historical, and cultural critique as introduced by Social Informatics.

Dataization Movements

If the critical work started in Social Informatics is to continue and if we continue to believe that one of its core aims is working to uncover the ideological distortions set in motion by movements of computerization, it is necessary to look beyond the original sites of such ideologies and to examine them as they have shifted and been transformed. Although numerous such sites exist (Hara & Rosenbaum, 2008), attention here will be given to the ideological forms surrounding the rise of data analytics in its various forms. As will be discussed, what I term "dataization movements" serve to play a fundamental role in supporting the continuation of the ideological work of the original computerization movements. This comes as dataization movements display a cross-cutting thematic relevance to computing in general and an advocacy for certain ontological and epistemic conditions (boyd & Crawford, 2012; Callebaut, 2012; Floridi, 2012). In this continuation, the new ideological formation surrounding the uses of data is founded on the necessary conditions set forward by previous computerization movements. In turn, based on this reliance, dataization movements support the replication of basic computerization. Here, the already-diagnosed implications of the rise of dataization on foundational epistemic questions (boyd & Crawford, 2012; Callebaut, 2012; Floridi, 2012) provides a fulcrum for understanding the developing conditions faced by Social Informatics research into far-reaching ideological concerns.

As a leading example of the potential reach of a data-driven ideology, the advertised potential for the application of big data (however variously and imprecisely defined [boyd & Crawford, 2012; Hendler, 2013; Mayer-Schönberger & Cukier, 2013]) to any number of problem domains relies on a commitment to certain ontological and epistemological framings in which data's ability to disclose the truth of a situation by sifting through the available empirical and quantifiable evidence is assumed. Such a positivistic approach presents deeply ingrained presuppositions regarding the power of data analytics over the role of human cognition or the influence of any particular historical condition for the determination of meaningful truth (Anderson, 2008; Callebaut, 2012). The proffered benefits of the implementation of such systems of data analytics brings along a set of background commitments necessary for its implementation that reshape larger domains. In this case, there is an alignment of data analytics, its largely positivist epistemology, and the possibilities of insight and truth.

It is these sorts of epistemic and ontological commitments that lay the groundwork for further and more wide-reaching modes of social organization beyond the immediate questions of data analysis.

As techniques of data analytics are applied to learning (Long & Siemens, 2011), biology (Callebaut, 2012), enterprise (Lavalle, Lesser, Shockley, Hopkins, & Kruschwitz, 2011), and beyond (Mayer-Schönberger & Cukier, 2013), each area comes, rightly or wrongly, to be a central site for the replication of the ideological position according to which it is judged. By engaging in data-analytic approaches, the terms and problematics of these fields are, in quarters where such approaches are seriously applied, confined to certain epistemic understandings (the use of quantified data, for example) and certain ontological positions (positive-mechanical, for example).

Unlike the original computerization movements (Kling & Iacono, 1988) and the generations that followed (Elliott & Kraemer, 2008), ideologies of data have aims that lay beyond sheer adoption. Unlike computerization, the use of data analytics requires ontological and epistemic commitments that go beyond a belief in productivity and, in many ways, offer computerization longer-lasting ideological support than the original argument for computerization alone can bring. The colonization of discourses by data-centric ideological movements sets the stage for the reproduction of both these ideologies of data and of the modes of computerization on which they rely. Given this complex relationship between previous ideologies of computerization and newer ideologies of data, Social Informatics is pressed to re-evaluate its understandings of the implications of ideology in a radical way.

Toward Theoretical Social Informatics

The version of Social Informatics presented here so far is particular to a U.S. version of Social Informatics, one which is largely descended from the work of Kling (2007) himself and that "is defined by its topic (and fundamental questions about it)" (p. 205). Other strains of Social Informatics take on a slightly different character. For instance, European varieties of Social Informatics consider it to be a mode of data-driven sociological study or as the application of ICT to social or governmental projects (Vehovar, 2006). In this, European variants share both the empirical and sociotechnical orientations of U.S. varieties, and as a result appear very similar. Yet, they still remain distinct for reasons beyond geography. So what then, if neither topic nor the empirical emphasis distinguishes the two strains, still allows their research programs to appear distinct?

The key is found in the parenthetical Kling (2007) appends to his statement regarding Social Informatics's definition by topic in which he clarifies that it is not just the topic itself but also "fundamental questions about it" (p.205) that defines his variety of Social Informatics. In this, a

distinguishing feature of Social Informatics becomes one of its own internal problematic, questioning the nature of the topic itself. Such a critical approach toward the constitution of a problematic—one which deals not in a humanistic-emancipatory rhetoric, but rather with a critical analysis of a problematic—follows a distinctly Althusserian theoretical position founded on a similar critical approach toward the development of a new problematic (Althusser & Balibar, 2009).

What comes to be apparent is that the topic of Social Informatics is not so much either technology or society (or even both together), but rather is about the conceptualization of the relationship between the two and a critical diagnosis of its meaning. The empirical position of Social Informatics becomes complicated by such a critical stance in that "the empirical objects of Social Informatics can be as much conceptual constructs as empirical entities, and second, that Social Informatics's central concern is the examination of the notion of information as a culturally and historically specific conception of knowledge" (Day, 2007, p. 576). Such is explicitly the case when looking at the sort of ideologies and computerization movements that form the main site of critique for Social Informatics. By opening its methodological possibilities to include consideration of conceptual constructs and the possibility of their historical shaping, there is already an initial shift in the purposes of Social Informatics away from the strict subject–object divide, which normally maintains empiricism's sensuous relationship between objects and our ability to know them.

Faced with these concerns regarding both its problematic and empirical method, Social Informatics turns explicitly theoretical and engages the question of Social Informatics itself—and the diagnosis of its problematic and its function—as part of its critical mission. The central concern for Social Informatics becomes one of theoretical framing and development: How are we to critically approach questions of the relationship between technology and society? What are the terms for understanding the ideologies surrounding movements of both computerization and data? In order to sustain such a critical emphasis, it becomes necessary to develop a theoretical understanding of the relationship between society and technology, which accounts for their mutual influence (a theoretical necessity that Kling (1980) himself endorsed). At the same time it is necessary to have a theoretical understanding of how (if at all) an empirical approach can be used to build reasoned arguments about both conceptual and sociotechnological phenomena. In order to flesh out what this larger theoretical problematic at the heart of Social Informatics's analysis of ideology may look like, I will turn to a brief introduction to the philosophical work of Althusser.

Althusser's Social Theory

Founded on a radical re-reading of Marx, Althusser offered an attempt toward a "comprehensive theory of the 'social'" (DiTomaso, 1982, p. 15). Taking an anti-humanist stance, Althusser's work stands in stark contrast to strains of humanistically derived critical theory. Not concerned with any sense of humanistic emancipation, Althusser looked to define a process of social influence and historical progression visible without the influence of any particular historically situated subject. Developing his philosophical work from Marx's original base/superstructure model, which proposed that the material (economic) base is determinant of the ideological or political superstructures, Althusser proposed a structured model of social influence, which, unlike Marx's model, allowed for a reciprocal arrangement of influence (Poster, 1974). At any given time, any level of practice (ideological, political, or economic) could function as the "structure in dominance" (Althusser, 2005), with an ultimate reliance on the economic base coming only in the last instance (which may or may not arrive or ever be called to exert its influence). In this schema, social structure is a lived-thing, formed out of the active relationships and practices in which individuals take part. In their autonomous operation, it is possible for these levels of practice to stand in contradiction to one or both of the other levels, leading to the overdetermination of social structure as it is constituted by multiple, sometimes overlapping forces. As a result of this overdetermination, there may be instances of uneven development in which "the different overdeterminations at different times and places results in quite different patterns of social development" (Althusser, 2005, p. 250). It is worth noting that this theoretical model of social structuring provides support for many of the key findings of Social Informatics (Lamb & Sawyer, 2005; Ortiz, Herlau, & Rasmussen, 2006; Sawyer & Eschenfelder, 2005; Sawyer & Rosenbaum, 2000), which point to the uneven and overdetermined effects of computing.

Ideology and Social Informatics

Turning to the question of ideology, for Althusser (2001), ideology is understood as "an imaginary relation to real relations," which "is itself endowed with a material existence" (p. 113), saying that "there is no practice except by and in an ideology," and that "there is no ideology except by the subject and for subjects" (p. 115). In this definition, Althusser distinguishes his understanding of ideology from older mechanistic and hermeneutic interpretations of ideology, proffering a definition that is at the same time imaginary and material, based in practice and inextricably linked to the definition of the subject. For Althusser, ideology is given a quasi-ontological character. Older modes of ideology are given only ideal formulation—either as false image propagated by a controlling figure (as in the example of the despot or priest) or, following a more traditional reading of Marx, an

interpretive papering over of the alienating material conditions of existence with some more acceptable image. They are linked to belief more than to practice, and are directed toward ideological imputation of the subject, not its ideological constitution.

In many respects, these previous approaches to ideology critiqued by Althusser correspond to the forms of ideology associated with earlier analysis of movements of computerization. For example, a traditional account of ideological influence can be seen in the way in which those with a vested interest in the expansion of computing (computer companies, programmers, computer scientists, technologists, etc.) argued for and advertised an ideal image of computation. Similarly, office workers and others whose work might have been able to take advantage of computing presented themselves with an image of the liberating possibilities of computing. Despite the success of these models of ideology in diagnosing earlier forms of computerization movements, the widespread epistemic and ontological implications of data-centric ideological movements call for a different mode of analysis that extends beyond these mechanistic and hermeneutic modes of ideology.
For Althusser, the function of ideology is more universally given than the propagation of a particular social organization or particular sense of productivity. It is not reliant on any external imputation, but is instead sustained by individual practice. More than just an idealization, ideology is seen as being bound up in material and very real practices, avoiding any association with either internal ideal notions of ideology or external repressive force. As Žižek (1994) puts it:

> When Althusser repeats, after Pascal: "Act as if you believe, pray, kneel down, and you shall believe, faith will arrive by itself," he delineates an intricate reflexive mechanism of retro- active "autopoetic" foundation that far exceeds the reduction is assertion of the dependence of inner belief on external behavior. (p. 12)

In Althusser's schema, the material practice of ideology exceeds any need for ideological belief, with such practice finding its foundation in its being bound up in the ideological structures we have built and continue to reinforce with our behavior. The model of ideology that Althusser sets out goes beyond "the communication of key ideological beliefs" (Kling & Iacono, 1988, p. 227) in computerization as critiqued by Social Informatics and looks toward the habituation of practice even at an ontological and epistemological level.

In focusing on practice rather than on ideal discourse, Althusser's theory of ideology accounts for how our uses of data and the practices that surround it (education, health, enterprise, etc.) do not rely on any kind of epistemic belief in their power, only their material effect. As in the allusion to

Pascal, we do not need to believe in data, we only need to clasp a fitness tracker around our wrist, submit our data points, and the ideological effects will come of their own accord. It does not matter if we believe in the power of data analytics, only that they work when put into practice. Dataization movements do not rely on belief in order to reproduce their ideological positions; they rely instead on a more deeply ingrained practical engagement. As data analysis comes to be a central method for veridiction, its ideological position is upheld through its use as arbiter, not any impressed belief.

Computerization, as it has insinuated itself into other, economic activities in such a pervasive way, loses (though perhaps not entirely) its ideological character and comes to function as the kind of material and economic base that founds the structure of Marxian analysis. Following Althusser's model of social structure, while functioning independently, such an economic material base of computation supports the ideological superstructure of dataization, with either directing the form of the larger structure until the "last instance" in which the material structures of computerization determine the structure of the larger social form. Because of this final reliance of the ideological superstructure on the material base, the ideological reproduction of movements of dataization support and re-instantiate the material practices advocated for in the original movements of computerization. An ideological movement toward data analysis eclipses, and in turn supports, previous models of material computational practice.

In linking ideological practice to the reproduction of the material base of computing, this rendering goes beyond the sense that ideologies, as Kling and Iacono (1988) put it, "set adopters' expectations about what they should use computing for and how they should organize access to it" (p. 227). Instead, an Althusserian account of ideology looks toward the ingrained material practices that *constitute* belief and expectation, drilling down to the more fundamental material basis of ideologies of computerization and data analytics. For Social Informatics, this changed state of affairs has important implications for the ways in which research into ideology is to be understood and conducted, particularly regarding the empirical subject.

Ideological Consequences of Empiricism

The relationship between ideology and the subject is not a trivial one. As Althusser (2001) formulates it,

the category of the subject is constitutive of all ideology, but at the same time and immediately I add that *the category of the subject is only constitutive of all ideology insofar as all ideology has the function (which defines it) of "constituting" concrete individuals as subjects*. (p. 116)

As characterized by Althusser, this invocation of the ideological subject links the always-already existent figure of ideology to the constitution of the subject who in turn constitutes ideology through their engagement with ideological practices.

This connection between the existence of the subject and ideology is one that poses a serious question regarding the way in which Social Informatics approaches the question of ideology. If empiricism is founded upon the relationship between a subject and an object, then empirical work would have to be considered, at base, to be ideological rather than scientific. That is, by defining the sensing subject of empiricism, the ideological movements analyzed by Social Informatics would in turn define the work of empiricism itself. This is directly evident in looking at ideologies of data analysis, which call to be critiqued—in a reflexive fashion—by empirical modes of data analysis. Any empirical formulation of Social Informatics which seeks to address the questions surrounding the ideological movements of computerization and data faces a reflexive challenge: How may the empirical tools that are put to use avoid the ideological influence of the subject? If the conceptual categories and evidence utilized as part of empirical Social Informatics research are founded on our being subject to an ideology of computerization movements or data analytics (or other ideological movement), how can they begin to be used as fulcrum for the further critical work of Social Informatics?

Contrasting his notion of ideological practice with a non-ideological "theoretical" practice, Althusser (2005) opens the discussion of how Social Informatics may critique ideological structures without relying on an empirical methodology that is no longer able to sustain such critique. Instead of relying on empirical examination as the basis for the generation of nonideological knowledge, Althusser's theoretical practice conceives of scientific work as the movement of ideological thought toward theoretical knowledge by means of theoretical practice. In this way, the object of knowledge is not necessarily constituted by the object itself, but rather by a process termed "the knowledge effect" by Althusser (2005), by which the object becomes known in a non-ideological, theoretical fashion:

[A] science never works on an existence whose essence is pure immediacy and singularity ("sensations" or "individuals"). It always works on something "general," even if this has the form of a "fact." . . . [A] science always works on existing concepts. . . . It does not "work" on a purely objective "given," that of pure on absolute "facts." On the contrary, its particular labor consists of *elaborating*

its own scientific facts through a critique of the *ideological "facts"* elaborated by an earlier ideological theoretical practice. (pp. 183–184)

That is, as the use of certain concepts and forms in the elaboration of scientific facts comes to be ideologically inflected (as per Althusser's consideration of ideology as practice), it becomes necessary to engage in the work of explicitly theoretical conceptual refinement in which there is a movement away from ideological knowledge toward a theoretically developed problematic. This picture of conceptual refinement resonates with Kuhn's (1996) description of the paradigmatic nature of scientific work that can be witnessed in the generation of new scientific disciplines and disciplinary problematics. Rather than proceeding as a mode of normal science, guided by existent paradigmatic (ideological) disciplinary control, Social Informatics is pushed toward a state of constantly revolutionary scientific work, especially as it works to critique the ideological forms of computation that (in a reflexive movement) take advantage of the insights developed from Social Informatics research.

This revolutionary mode of scientific practice operates within a larger extra-scientific context of sociological determinations. Within this constantly developing problematic, Social Informatics works in each instance toward a local, rather than universal understanding of computation. This constant re-factoring of the problematic functions as a theoretical and conceptual rather than empirical practice, one concerned with the definition of the concepts surrounding Social Informatics, up to and including the causal connections between technologies, their discourses, social structures, and the whole of the historical matrices of which they are a part. This is not to wholly discount empirically based observation and argumentation, only to assert the possibility of their ideological formulation. Empirical methods, like the ideological movements critiqued by Social Informatics, should be thought of as resting on similarly ideological foundations and that their usefulness begins and ends with the development of a sufficiently rigorous critical problematic.

By not being concerned with the object of empiricism, but rather with only the object of knowledge itself (Poster, 1974), Althusser's work provides a philosophical conception of how it is possible to "specify the gap between ideology and science, the space for critical knowledge, avoiding the reduction of science to ideology" (Resch, 1989, p. 536). Upholding the distinction between the object of knowledge and the object itself (Althusser, 2005), the critical and scientific stances of Social Informatics are able to be reconciled by taking all modes of information (in all its forms, both the object and knowledge about the object) as Social Informatics's proper object of study.

This self-reflexive consideration of the status of the discipline of Social Informatics circles back to the earlier claim that the tenets of Social Informatics have been sublimated by the very movements that it critiques. In addressing the question of the ideology of computerization and dataization movements, Social Informatics should also consider its own role in the development of such ideologies. That is, Social Informatics today finds itself in a hybrid, if not contradictory, position, both critiquing and, through a sublimation of such a critique, providing support for the continuation of such ideological movements. In the face of continually developing movements, the central task of Social Informatics is to consider its motivating questions in a fashion which likewise opens up new modes of critical practice.

Discussion and Implications

Such a re-framing of the theoretical basis for Social Informatics has two important and immediate practical implications for the field. First, the work of Social Informatics itself takes on a largely self-reflexive character, one which stems from the theoretical necessity to reconsider what might be the ideological implications of any empirical work. As it is confronted with an ever-shifting field of technological action, Social Informatics is forced to engage in a constant reformation of its practices and aims in face of the developing ideologies surrounding computerization. This can be particularly seen in the way in which the results of the Social Informatics research regarding the development of the idea of proper sociotechnical fit have been incorporated, in the manner of a hegemonic allowance, into the program of computerization movements. The emergence of ideologies of data analytics that are distinct from, yet intimately connected to ideologies of computerization, proves another instance pressing for such continual renewal.

Although an explicit call for a constant reformulation of Social Informatics may be novel, in practice, such evolution has long been evident. Aspects of this need for self-reflection and conceptual redefinition can be seen in Kling's constantly evolving approach to Social Informatics in response to a changing historical and technical setting (Day, 2007).

Second, and more importantly, this Althusserian framing has implications for the ways in which we conceive of the ethical nature of the work of Social Informatics. Building on the already quasi-ethical ontological position taken by Social Informatics in its denial of a deterministic influence of technology and its assertion of the potential for the ethical consequences of the manner in which technologies are deployed (Sawyer & Eschenfelder, 2005), an Althusserian turn in the theoretical

understanding of Social Informatics presents a view of ethics distinct from the normally humanistic value given to such. In this, any work of ethics surrounding Social Informatics should be approached not from a position of an ideologically given ethics of a humanist position, but one which is formulated in theoretical and more abstract terms (Althusser, 2005). Tracing Althusser's influence to the work of Badiou (Feltham, 2008), it is possible to see how Althusser's claims regarding a scientific theory of history and social structure can provide a foundation for ethical considerations. Though separated by several years of conceptual development, Badiou's approach to a mode of singular ethics remains anchored to an Althusserian foundation, aligned along a concern for the production of the subject:

> If there is no ethics "in general," that is because there is no abstract Subject, who would adopt it as his shield. There is only a particular kind of animal, convoked by certain circumstances to become a subject—or rather, to enter into the composing of a subject. (Badiou, 2001, p. 40)

For Badiou, as he works the idea of particular, subjective actions against their universal implications, it becomes possible to see the ways in which the existent technological situations with which we are involved should be approached. Pointing back to the first implication described, such an ethics pushes for a constant re-engagement with and openness to those circumstances that allow for the development of subjectivity. As in the early formulation of Social Informatics's problematic, computerization must be understood in local and not universal terms. For Badiou, it is an issue of staying true to the events presented to us and not engaging with them in a prefabricated fashion. This ethics goads Social Informatics toward the constant reconsideration of both its aims and the modes of technological discourses with which it is engaged.

When bringing Althusserian theory to bear on Social Informatics, these twin implications of a constant need for critical reflection and ethical engagement are perhaps best tempered by Derrida's critique of the certainty of Althusser's Marxian presuppositions (Sprinkler, 1993). In pushing away from the rigid divide between ideological practices and those deemed theoretically sound, Derrida's weakening of Althusser's concepts points toward an inde- terminate space in which Social Informatics research becomes committed to the uniquely singular event of the confluence of social and technical forms with which we are today confronted. In the dissolution of the empirical foundation for its research, the judgement of Social Informatics comes to be one always set in the present situation in which the research actively comes to terms with the concepts and ideologies as they presently are, indeterminate as this may be. In this, the researcher, being presented with some system or application of data analysis is called to confront the system and ask what it can achieve and what it can mean. This comes as a particular moment of decision, with Social

Informatics taking the shape of an ethics concerned more with the question of the purpose of any technology than with a mechanical empirical consideration of a narrow range of effects and claims as would be analyzed by a solely empirical method. Building on this kind of Aristotelean question of how technologies should be seen to contribute to a "good life," a more lasting ethical import is given to Social Informatics in that it resolves to question not only the effectiveness, but the ontological and epistemic directions of our technologies and the societal structures in which they are embedded. This leads Social Informatics and its consideration of ideology toward a continuing decomposition and questioning of its concepts, the relations of ideology to causality, and the larger materialities of computer systems themselves.

Conclusion

Social Informatics's analysis of the ideologies of computerization movements needs to be recast today in light of the rise of ideologies of data, which, hand in hand with computerization, push not only for the reshaping of social forms, but for a reshaping of how those forms are to be understood. Distinct in their concerns, ideologies in support of data analysis have far reaching epistemic and ontological implications. By focusing on this material and praxis-based understanding of ideology as something which is replicated by individual subjective constitution, it is possible to describe both movements of computerization and the ideological movements of dataization that have developed. Tracing the connection between subjectivity and ideology weakens Social Informatics's initial claims for a foundational role for empiricism when approaching questions of ideology, and pushes the research program in the direction of an ethical and critical practice. In this, Social Informatics is pointed toward a task of not only studying the effects of the implementation and use of technology, but also of laying a groundwork for the fundamental consideration of how the terms of such a discussion are cast.

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