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Mike W. Chiasson
Lancaster University, m.chiasson@lancaster.ac.uk

Elizabeth J. Davidson
University of Hawaii at Manoa, Elizabeth.Davidson@hawaii.edu

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Mike W. Chiasson
AIM Fellow, Senior Lecturer
Dept. of Management Science
Management School, Lancaster University
Lancaster, UK, LA1 4YX
m.chiasson@lancaster.ac.uk

Elizabeth J. Davidson
W. Ruel Johnson Distinguished Professor of
Information Technology Management
Shidler College of Business
University of Hawaii at Manoa
Honolulu, HI 96822
Elizabeth.Davidson@hawaii.edu

ABSTRACT

In this essay, we argue that being relevant to practice must imply a concern with influencing future IS practices. Discussions of IS research relevance, however, are rarely explicit about how research is meant to shape the future. Drawing on Feenberg's (2002) critical theory of technology and his concepts of *primary-secondary instrumentalization* and *potentialities*, we consider how IS research about the past can inform the future of IS practice. We then explore implicit assumptions about shaping the future in positivism, interpretivism and critical research, and consider how design science and action research may be addressing technological potentialities. We draw attention to Zald's (1993) enlightenment model as an alternative to suggest how IS researcher might be more open to research approaches drawn from the humanities for social and technical critique. We conclude by considering the feasibility of our suggestions.

KEYWORDS

IS practice, past, future, context, potentiality, deconstruction, philosophy of IS

It is above all by the imagination that we achieve perception and compassion and hope.

Ursula K. Le Guin, science fiction writer

1. INTRODUCTION

As we approach the end of the first decade of the 21st century, ongoing transformations in business forms and practices, economic institutions, and society are greatly influenced by developments in information and communications technologies (ICTs). Some of these transformations dazzle us with possibilities for improving social welfare, while others suggest that social inequality may be increasing and preserving the status quo. As a field of research focused on the design, adoption, utilization and consequences of ICTs, we should have much to contribute to the shaping of information systems (IS) practices that influence these future outcomes. By IS practice we speak broadly of the development and application of information technologies and systems, and of the management of such activities within organizations and industries. Debates about the relevance of IS research to practice have been with us for many years. Starting with Keen's (1991) call for relevance and rigor, recommendations for increasing the relevance of IS research have included focusing on topics of interest to practitioners (Benbasat and Zmud 1999), producing and communicating consumable IS research (Benbasat and Zmud,1999; Robey and Markus, 1998), fostering new constituents for IS research beyond the IS profession (Markus 1999; Myers and Baskerville 2002), and incorporating applicability checks into the research process through active engagement with managers and practitioners (Roseman and Vessey 2008). These arguments focus on relevant IS research as knowledge which informs IS technical professionals (including vendors), managers who direct IS practices in organizations, and possibly the users of information technologies on how to use information technology (IT) more effectively and efficiently.

Despite numerous calls to improve IS research relevance, many fail to state directly that relevancy may be about the ability of researchers to influence the future of IS practice (rather than specific practices in the future). If influencing the future is our goal, then we must ask whether and how our approaches to theoretical and empirical research affect our ability to do so. And, if the future is about values, what do we wish IS practice to be, and how do we go about addressing what is often considered to be beyond our research – the messy, unscientific questions of social values, ethics and morality? While we do

not directly address all of these questions in this paper, we do suggest how responses to these questions in IS research and writing might expose and expand our field's assumptions about the relevancy of IS research to the future.

Our arguments will follow this general outline. First, we draw from Feenberg's (1991, 1995, 2002, 2003) critical theory of technology and his concept of *potentialities* as a philosophical and theoretical basis for thinking about IS researchers' influence on the future of IS practice. We next consider the largely implicit roles of IS researchers in shaping the future within the traditional epistemologies of positivism, interpretivism and critical theory. We explore approaches to IS research that appear to be interested in shaping future IS practice – design science and action research. We then consider the enlightenment model for research proposed by Zald (1993) to suggest that approaches drawn from the humanities could complement the social science and problem-solving approaches typical of IS research. We argue that such approaches could provide a platform for the informed speculation the future of IS arising from alternative values and ethical positions about technology design and IS practices.

2. PHILOSOPHICAL AND THEORETIC FOUNDATIONS

Feenberg's (1991, 1995, 2002, 2003) critical theory of technology provides a theoretical and philosophical foundation for considering how IS research could be relevant to the future of IS practice. Feenberg suggests that various unrealized *potentialities* could arise from the interaction of what he calls primary and secondary *instrumentalization*. *Primary instrumentalization* involves abstracted affordances in technology that can be mobilized across time and space. *Secondary instrumentalization* is the process of re-contextualizing these technological artifacts within specific settings, where emergent socio-technical practices are realized anew.

Feenberg's claim is that many secondary instrumentalizations are restricted by two approaches to technological implementation– the *instrumental view* and the *substantive view*. The *instrumental view* assumes that technology is shaped towards specific human ends, and that technology is purely instrumental and neutral in increasing efficiency to achieve these ends (Feenberg, 2002, p. 6). Because technology is neutral and value free, its effects are not dependent on the internal workings or design of the tool, but on the "good" or "bad" intentions of the users. The instrumental view of technology also assumes social and economic progress will result as human societies exploit the efficiency within technology for these given ends. Feenberg argues that striving for technical efficiency as the sole goal of design often is directed toward preserving existing positions of power and profit, and thus it restricts the potentialities of secondary instrumentalization. This assumed and widely held *technical code*, as he calls it, privileges these values over other possible social values and priorities.

In contrast but with similarly restrictive effects, a *substantive view* of technology considers technology as embodying particular social and cultural values and outcomes that are similarly produced in most social settings. For example, the development of fast-food techniques and production systems inexorably create a "fast food society" (Feenberg, 2002, p.7). Feenberg suggests substantive views of technology are closely associated with social critiques of technology as dehumanizing, impersonal, and hegemonic. The only response to ameliorate these socially undesirable technical effects is to abandon the use of technology entirely – a restrictive outcome that fails to deal with the inherent instability and possibilities of technology design during secondary instrumentalization.

Although there are significant differences in the instrumental and substantive views of technology, Feenberg believes that both assume technology implementation relies solely on efficiency and control as the basis for rationalizing human activity. In the instrumental view, the technical code of efficiency and control is unproblematic, the desired outcome. In the substantive view, this technical code is problematic, a dehumanizing outcome to be avoided. His point is that both views severely restrict the possibility of envisioning alternative social practices that could emerge from technical implementation and thus limit the potentialities of technology. Feenberg suggests a revised theory of technology, one which acknowledges a broader range of potentialities arising from alternative technical codes, could expose more sympathetic fusions of technical affordances with social practices. Ideally, such a philosophy "exposes the obstacles to the release of technology's integrative potential and thus serves as the link between political and technical discourse" (Feenberg, 2002, p. 177).

Feenberg and associates have applied his philosophical insights to the analysis of online education in universities, in which he was an early participant and advocate (Feenberg 2002; Hamilton and Feenberg 2005). Characterizing the sometimes polarized debates over online education as prototypically instrumental or substantive, they note, "What one group conceives as a search for greater efficiency and accountability, the other sees as increasing deprofessionalization (even automation) of academic labor … on each side, technology emerges as a *fait accompli* with which the university must comply or which it must reject out of hand in defense of traditional academic values and priorities" (Hamilton and Feenberg, 2005 pg. 106). The primary instrumentalization of online educational technologies – information storage, representation, transmission, and display – are necessarily re-contextualized within a framework of pedagogical assumptions, values and roles (the technical code). This secondary instrumentalism promotes a de-contextualized, automated instructional mode or, alternatively, an

interactive, geographically and temporally dispersed mode of learning and instruction. How online education takes its form and influences the future of higher education, they argue, will depend on who defines and influences the technical code around technological affordances: "The technical code of online education is relative, then, to the interests, assumptions, and values of the actors who are engaged in the design and development process, and who are thus positioned as powerful interpreters of the technology and the social forms it mediates" (Hamilton and Feenberg, 2005 pg. 112).

3. POSSIBLE ROLES FOR IS RESEARCHERS IN SHAPING THE FUTURE OF IS PRACTICE

Feenberg's critical theory of technology challenges researchers to question the assumptions behind the contemporary design of technical systems -- the *technical codes* that limit the secondary instrumentalization of technology, in order to bring to light unrealized potentialities of technology through other social, political, and ethical frames (Feenberg 2002, p. 77). To do so the researcher would not only examine the concrete aspects of the technical devices and systems which influence potentialities, but also the social and cultural assumptions that shape and restrict secondary instrumentalization during design and implementation. In doing so, researchers would need to explain and possibly challenge commonly held assumptions about IS practice and practitioners, which restricts the social, ethical, and political basis and outcomes of technological design. We consider how such critique may (or may not) be manifest within current approaches to IS research

3.1 IS Researcher as Social Scientist

Debate about research epistemologies, typically the relative value of and differences among positivism, interpretivism and critical research have long raged in the IS field (Orlikowski and Baroudi 1991). While much insight has been gained from this debate, we suggest each epistemological stance nonetheless contains largely unarticulated views on how IS researchers are meant to inform and help shape the future of IS practice. For example, we suggest that an unarticulated assumption with positivism is that the revealing of general and invariant patterns of behavioral and technical outcomes in current practice is relevant for the future, because these patterns will hold across large expanses of time and space. Whether this assumption is correct is an important question; however, our point is to highlight the assumption with positivism that the past is, will be, and even should be the future. This assumption could be aligned with an instrumental view of technology – that the goals of efficiency will necessarily be achieved through value-neutral technologies – or with a substantive view of technology, which assumes that technology necessarily carries with it particular social outcomes.

Interpretivism, in contrast, seeks out the numerous, specific patterns of IS activity in time and space, assuming the future could always be very different from the present (cf. Orlikowski 1992). That is, the disclosure of many interpretive worlds and the various IS practices suggests that diversity and emergence is the future of IS practice. While the values and ethics of participants may be considered in the research, there is very little epistemological basis for the researcher to critique and influence the future of IS practice in purely interpretive work. What exists is what exists, and legitimacy is granted to these numerous secondary instrumentalizations of technology by disclosing them and their interpretive logics.

The critical approach to research explicitly critiques present IS practices and is thus the most direct of the three epistemologies to consider how different social values could produce different futures. That is, the purpose of critical research is to liberate the future from the present through critique. Despite considerable diversity in critical approaches in IS research, we suggest that critical studies have the potential to move beyond the general knowledge goals of ideal positivism and the ideographic knowledge goals of ideal interpretivism to help transform secondary instrumentalization of technology. Feenberg (2002) cautions, however, that critical social research often rests upon broad theories of deterministic social forces and therefore can result in a form of substantivism that assumes technology inevitably carries with it hegemonic social outcomes. If so, the implication is to discount other potentialities and to eschew technology (or specific technologies) in order to avoid such future practice. Feenberg criticizes dystopian and substantive views evident in much critical social theory by suggesting that technologies are inevitably a part of the future and cannot be excluded, however forcefully, from it.[1] Instead, his revised critical theory of technology suggests a role for researchers in fostering a democratic dialogue during secondary instrumentalization, which could result in alternative designs and practices. That is, Feenberg suggests a more active and social entrepreneurial role for researchers than positivism, interpretivism and most critical social theory, towards a more grounded revealing of technical and social potentialities in particular times and places.[2]

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[1]   Unlike Frankfurtian critical theorists, Feenberg does not provide a general theory of ideology that casts continuous suspicion on technology. In contrast to Habermas, Feenburg acknowledges the potentialities in the technical, and the social and political realities of particular settings, which both enable and restrict communicative dialogue.

[2]   Socio-technical design theorists similarly highlight the engagement of research and practice, but the basis for participative dialogue has assumed particular social conditions, like union power and the fusion of managerial and employee interest. Mumford admitted late in her life such conditions were no longer evident.

In the IS research world, design science and action research do incorporate a more active and entrepreneurial role for the researcher to influence IS practices. While these approaches are promising, we will suggest there remains a restricted view of the researcher's role in helping to shape the future IS practice more generally.

3.2 IS Researcher as Design Scientist or Action Researcher

According to the design science page on the AIS web-site[3] and numerous articles on the subject (Hevner et. al., 2004; March & Storey, 2008; Pries-Heje & Baskerville, 2008), design science challenges a number of assumptions about positivist IS research, by suggesting that design science researchers create new artifacts (constructs, models, methods, instantiations, and better theories) within specific environments. In doing so, design science appears to address and possibly challenge the axiological values in a community which shape perceptions of the "goodness" or "badness" of a design. It also legitimates the autonomy of the researchers in exploring risky artifacts beyond what practitioners may do by eliminating risky options in order to provide a quick solution for clients. Design scientists thus should be willing to take more risks in order to reveal and test future possibilities.

Action research engages researchers in using theory to address problems found in particular settings (McKay & Marshall 2001). The results of such studies are meant not only to solve specific problems but also to inform and shape existing theory (Chiasson et al., 2009). Action research is similar to design science in addressing situation-specific problems, and designed artifacts such as information systems and methodologies can be an outcome of action research studies. However, action research focuses on a broader range of targets and outcomes beyond design artifacts, such as social and organizational change. The canonical form of AR (Davison et al, 2004) also leads researchers and participants through similar stages found in design research, such as problem diagnosis, action consideration, action taking, and the evaluation of action.

While both design science and action research begin to address the future and technological potentialities, both approaches are limited forms of critique if compared with Feenberg's vison. For example, in IS action research, founded largely upon principles which avoid critical and participatory approaches to AR, questioning underlying values in the organizational setting that direct secondary instrumentalization is largely avoided. The problem and its definition, explored technically through early AR stages to determine possible solutions, is largely unquestioned. Similarly, the design scientists' consideration of axiological values occurs within a structured problem solving approach (through Simon, 1996), which lacks a critical exploration and transformation of secondary instrumentalization, as suggested by Feenberg. That is, both approaches, by accepting uncritically the practitioners' (typically managerial) problem definition, appear to take for granted the instrumental logics of technical efficiency that Feenberg wishes to supersede and thus limit the extent to which alternative potentialities may be considered.

We turn now to a more radical set of humanistic possibilities for IS researchers, which might enable the type of social entrepreneurship suggested by Feenberg to help shape the future of IS practice.

3.3 An Enlightenment Model Of IS Research

Zald (1993, p. 514) critiques applied disciplines such as organizational studies and, in our case IS research, for relying too heavily and exclusively on social science models of research, which avoids the approaches found in the humanities:

> "[t]he problem is not that the social sciences are also humanities, but that they have been poor humanities. In the rush to be scientists, scholars have been overly detached from the philosophical, philological, historical and hermeneutic traditions."

This resonates with Feenberg's (2003 np) observation:

> "We need to understand ourselves today in the midst of technology, and technical knowledge itself cannot help us. Philosophy of technology belongs to the self-awareness of a society like ours. It teaches us to reflect on what we take for granted, specifically, rational modernity. The importance of this perspective cannot be over-estimated."

Zald's and Feenberg's critiques suggest that, in the quest to be social scientists (or design scientists or action researchers), IS scholars take for granted the cultural values underlying technological design. Perhaps hoping to be immediately relevant to practice, researchers tend to compromise their ability to be reflective about the historically and culturally situated nature of IS practice and thus the possibility that the future, while arising from present practices, could become something very different.

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[3]   http://home.aisnet.org/displaycommon.cfm?an=1&subarticlenbr=279, accessed April 18, 2009.

The enlightenment model proposed by Zald (1993) is consistent with Feenberg's expectation that the critique of taken-for-granted social and cultural values and democratic debate about and participation in secondary instrumentalization could produce technology designs that incorporate a wider range of social values and hence potentialities. In this regard, Zald (1993, p. 524) suggests scholars make available their reflective capacity of detachment and the scholarly breadth of their vision, in the tradition of the humanities, to reflect on the moral and normative dimensions of social institutions. Zald (1993, p. 514) posits further that recasting practice-based disciplines as part of the humanities would be transformative for both researchers and participants:

> "Nesting organizational studies within the humanities, an 'enlightenment' model (as contrasted with an engineering model) is suggested … a model of an applied discipline in which the goal is education for public and civic participation, not necessarily for specific problem solving. An enlightenment model suggests an educative and autonomous role for organizational studies."

What would this imply for the practice of information systems researchers? We suggest that the social entrepreneur role toward the future IS practice, implied by Feenberg's critical theory of technology, necessarily entails educating, informing, and even inspiring practitioners to consider new potentialities during technology design, and that the humanities provide alternative ways to help us. For organizational studies, Zald (1993) discusses four approaches, which have found a small following in IS research: historical studies, the close reading of texts using deconstruction, rhetorical analysis, and the increasing use of narratives and story-telling.

It has been argued already in the IS literature that the expanded use of historical analysis would greatly add to our understanding of how IS practice changes (Mason, McKenney & Copeland, 1997). Histories of technological development and implementation, particularly in the social constructivist tradition (cf. Bijker 1995), have proven to be informative, and historical analysis drawing on actor-network theory has also found acceptance in IS research (cf. Lea et al. 1995, Bonner and Chiasson, 2005) in bringing to light the political and economic interests that shape technology design and use.

Deconstruction is a form of textual analysis and literary critique, which has found a small following as a critical theoretical approach to IS research (Chiasson and Davidson 2007). Often associated Jacques Derrida (2002), deconstruction raises awareness of the dominated possibilities in texts and text-analogues. The best-known example in IS research is Beath and Orlikowski's (1991) deconstruction of an information systems methodology text to highlight the contradictory attitudes towards user participation in systems projects. Consistent with Feenberg's challenge to unearth taken-for-granted assumptions in technology design, Davidson et al.'s (2006) deconstruction of a business press article highlights the preference for automation and control over human interaction in information systems architecture.

Interest in rhetoric and rhetorical analysis of information systems has also found some acceptance in IS research. For example, Heracleous and Barrett's (2001) analysis of the rhetoric used to justify electronic trading in the London Insurance market revealed the nature of user resistance to a system proposed by management and their ultimate success in limiting and controlling how the system was appropriated.

Narrative analysis of information systems projects is perhaps the most common (though still rarely used) approach in IS research borrowed from the humanities. Usually embedded in interpretivist approaches, narrative studies highlight struggles between stakeholder groups and sensemaking efforts of individuals and groups faced with technological change (cf. Brown 1998; Wagner et al. 2004, Wagner and Newell 2004).

Thus, we suggest that IS research can be relevant to future practice, not only by providing solutions to practitioners' existing problems or designing new techniques for increasing the technical efficiency, but also by critically examining the history of information systems and its consequences, deconstructing and analyzing the discourses that influence IS design in specific settings, and revealing the organizational and technical narratives that legitimate or challenge technology design. This would allow the IS field to use its knowledge of the present and past to challenge and help change future IS practice. Through these texts, we would need to engage not only ourselves but also other readers and constituents – managers and other IS practitioners – to educate, inform and persuade. We might venture further to consider literary approaches such as fiction or even science fictions to inspire a collective vision about future practice. In such cases, the criteria for relevance to the future would be if such works help us expand our assumptions and produce new potentialities for technology.

4. CONCLUDING REMARKS

Drawing on Feenberg's critical theory of technology (1991, 1995, 2002, 2003) and his concept of potentialities, we have argued that an important but largely ignored aspect of IS research relevance is its bearing on the future of IS practice. If the future is important to IS research, reporting on and analyzing present practices is only a first step. We suggested that the IS field can expand its ability to help shape this future by questioning the technical codes which restrict the social, ethical and

aesthetic values that guide technology design. To do so, we suggested that in addition to the traditional social science modes of research and the business-engineering approaches to revealing the future in action research and design science, IS researchers might consider humanistic modes of analyzing the past and present of practice to explore and comment on the potentialities for future IS practice. While our thesis in this paper focuses on philosophical and epistemological constraints to future-oriented research relevance, we acknowledge that addressing the important socio-technical challenges that IS practitioners (and society generally) face is critical to research relevance.[4] We hope our suggestions are consistent with this goal.

Thus far, we have seen little direct evidence of IS researchers taking an active role in talking about the future, at least beyond projections of how specific technologies and business practices might develop. Grey et al. (2008) is one recent exception. For the most part, IS researchers limit their speculations about the future to discussions of implications for practice and consideration of the generalizability of theory. This conservative and self-deprecating approach, while scholarly, says little about the social, ethical, material and political conditions that shape current and future IS practice. We suggest that a key reason that IS researchers eschew engaging directly with questions about the future is that the empirical focus of the field makes IS researchers tentative about future speculation, leaving it to pundits, consultants, futurists and charlatans. Speculation on a future that is complex, unstable and emergent may seem irresponsible for the serious work of observing and reporting on current IS practices. At a minimum, we may be simply unaware how our very understanding of and approaches to research, while providing a foundation for speculating on both the technical and social potentialities of IT, also limits our ability to think and write about the future in more imaginative ways.

We realize there are many obstacles to developing and gaining legitimacy for such future-oriented and social entrepreneurial work. Most social science researchers would continue to be suspicious of such unusual and speculative work. Researchers would have to engage in activities that are still largely unsupported in the research culture: value-based critiques of present conditions and practices, and speculation about the future. Current publication norms would be restrictive, journal reviewers would feel unable to evaluate the evidence and logic of such work, and theoretical and empirical academics might ridicule it. Given these structural limitations, it is not surprising that few IS researchers have embraced such approaches.

However, we believe that IS researchers focused on the relationships between primary and secondary instrumentalizations during technology implementation are in-fact well positioned to use their knowledge for an informed speculation on the future potentialities of IS practice. We suggest that helping to shape the future of IS practice is an empirical and theoretical opportunity as well as an ethical responsibility for IS researchers. Perhaps it is the defining approach and goal of the field to influence future practice. All research publications are at some level evaluated as much on their plausibility and insights about IS activity as they are on their absolute methodological rigor, as the increasing invoking of the "so what" question by reviewers implies. What we are suggesting is to add more speculative and humanistic strategies to this mix, and in doing so, to highlight the barriers and facilitators to realizing new potentialities in IS practice. In these ways, IS research could move beyond studying past IS practice towards a disciplined imagination about the future. Re-search would also become re-vision. The audiences for such work would include the groups we hope our research reaches: other academics, IS practitioners, business managers, policy makers, and students.

We conclude with science fiction writer Arthur C. Clarke's second law from his book, *Technology and the Future*: "The only way to discover the limits of the possible is to go beyond them into the impossible." Moving beyond the limits of current approaches to thinking, researching and writing about IS practice may allow researchers to participate more fully in shaping of the future.

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[4] We thank the anonymous reviewer and the minitrack chair for this reminder.

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