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Divergent and Convergent Paths

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Contents

Qualitative and Critical Research in Information Systems and Human-Computer Interaction

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ABSTRACT

Information Systems (IS) and Human Computer Interaction (HCI)–including Computer-Supported Cooperative Work (CSCW)–address the development and adoption of computing systems by organizations, individuals, and teams. While each has its own emphasis, the timelines for adopting qualitative and critical research differ dramatically. IS used both in the late 1980s, but critical theory appeared in HCI only in 2000. Using a hermeneutic literature review, the paper traces these histories; it applies academic cultures theory as an explanatory framework. Institutional factors include epistemic bases of source disciplines, number and centrality of publication outlets, and political and geographic contexts. Key innovations in IS are covered in detail. The rise of platformization drives the fields toward a common scope of study with an imperative to address societal issues that emerge at scale.

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1

Introduction

The history and adoption of qualitative and critical research in Information Systems (IS) presents an epistemic contrast with the adoption of similar methods/theories in Human-Computer Interaction (HCI) and to some extent Computer-Supported Collaborative Work (CSCW). The contrast is interesting because presumably the fields overlap in subject matter and would therefore overlap in methods and authors. However, a review of literature in both major areas (IS and HCI) revealed marked differences in acceptance of qualitative research and use of critical theory. The search for an explanation revealed institutional factors that affected the theoretical and methodological boundaries of the fields. These include differences in source disciplines, and consequently in the structure of publications, conferences, and reputation control mechanisms arising from the traditions of those source disciplines. Geographic and political factors also played a role. Hence the sense of a divergence. However, recent developments suggest a convergence.

The history of each discipline thus reflects institutional factors that affected the respective timelines for the use of these approaches. The sociological epistemic framework described by Whitley (2000) and by Knorr-Cetina (1999) helped identify the specific dimensions of these

institutional factors. It supports characterizations of the culture of IS made by members, as having an open paradigm with high collegiality, described as an adhocracy, and explains some HCI researcher frustrations observed on social media. The review suggests that qualitative and critical research arose interdependently in IS. The US/Europe divide in research traditions and political/epistemic climates drove the difference in uptake of methods and a critical framework in the respective regions. Research from beyond the transatlantic traditions postdates the developments covered here but are touched on at the end of the paper.

Positivism was the dominant framework in both IS and HCI at the beginning of the computer era. (CSCW became active in the mid-1980s.) This narrowed the scope of perceived legitimacy in research and allowed questions to be framed from a single managerialist perspective. Thanks to early research in the UK on Soft Systems (Checkland, 1981; Mumford and Henshall, 1978) and to the strength of Scandinavian labor unions, other modes of inquiry were adopted in the 1970s as the means of uncovering working people's perspectives. This gave rise to acceptance of ethnographic and sociological studies that were otherwise marginal at the time. Qualitative research was essential to the introduction of Critical Theory, as emancipatory discourse and inherent contradictions are discovered primarily by this route.

While the fields utilize qualitative and critical research, the adoption path and timing was different. All three areas deal with the role of human beings in computer use and design, and in understanding the human functions and activities that software overtakes. IS also deals with the higher-level social entities of organizations and institutions. As computer and communications technologies have expanded beyond the organization into the public sphere and entire societal infrastructures, new challenges arise that create an urgent need for critical research and specifically Critical Theory. The challenges are not technical challenges that computer scientists and developers can solve on their own, due to their institutional backgrounds and epistemic biases. The review highlights the importance of multi-paradigm fields that facilitate diversity of approach: technical, social, and philosophical, within the areas of social research and into the technical sphere.

Compiling materials and writing the article proved to be a deeper challenge than a normal literature review. There is more than one body

of research, from different repositories, using different conventions. It became a nonlinear process of discovery, possibly as a function of the topic. The materials led in diverse directions, and new insights came in play up until the very end. We are grateful to the work of Boell and Cecez-Kecmanovic (2014, 2015) for providing a validation of the hermeneutic path we accidentally followed. For instance, two books in press on Critical Theory in HCI came to our attention during late revisions to the paper. Their broader application of critical theory to postcolonial research convinced us to include this position in addition to Frankfurt School Critical Theory as a political critique.

The paper began as a narrative history starting from the early days of studying the social processes of knowledge work in the 1960s and '70s, prompted by the perception of a vaguely defined disciplinary split. Vallo Hult *et al.* (2017), in a bibliometric study of workplace learning provided clarity in an exploration of the use of learning theories. That study showed that HCI research draws on cognitive/constructivist theories and authors, with a focus on individuals, their mental models and processes, memory and perception, e.g. Bandura (1989, 2001), and Kolb and Kolb (2005, 2012). IS authors on the other hand more frequently cite organizational learning theorists, addressing knowledge management, e.g. Argyris and Schön (1978, 1996), Nonaka and Takeuchi (1995), and Dreyfus *et al.* (1986). This simple divide illustrates the core intellectual difference between the fields.

How this difference arose is a function of epistemic and institutional influences. The contrast was highlighted by a social media discussion on the Researchers of the Socio-Technical Facebook group (RST) about the difficulty of publishing qualitative work at the ACM CHI Conference on Human Factors in Computing Systems (CHI), as late as 2017. In IS, that discussion had taken place during the early and mid-1980s, carried out mostly in journal articles and conference papers, social media not being available. Further queries on social media about exposure of the HCI and CSCW communities to Critical Theory led to an appraisal of source disciplines feeding into these fields. The role of conferences, publication outlets, and source discipline backgrounds was also highlighted in the social media interactions (see Section 5). These differences might have been obvious to someone equally embedded in both fields; but it turns

out that not many researchers are equally embedded despite some commonalities. A few have commented on this, (notably Grudin, 2018; Iivari and Kuutti, 2017a; Lanamäki and Persson, 2016; Schmidt and Bannon, 2013), also noting that author overlaps are fewer than expected. Contrary to the supposition of a common interest, our investigation reveals a low rate of cross-citation between the disciplines.

Why did these two major fields both concerned with people and computers not come together more? The answer has to do with the early influence of positivistic methods and low tolerance for interpretive work attributable to the beginnings of HCI as primarily an adjunct to computer science (CS). This brought a dominant concern for how people interact with computers in a mechanical sense: input devices and screen layouts. This preoccupation had developed with the advent of interactive computing and general use. So first it was computing, then user interfaces and devices, then user cognition, and on from there, as will be discussed (Grudin, 2017).

The HCI field was therefore logically dominated in the beginning by experimental psychology, then cognitive psychology, subject to the values and programmatic commitments of computer scientists, that is, analytic rationalism. Since the contrast with CS and the "softer science" of user research was pronounced, the effort to be accepted required justification of method and verifiability. The "user" was described as a necessary "component in the system" in the US (Norman, 1986), not as a shaper of the new technology. Research into users focused on how individuals reason, form mental models, and respond to interfaces.

IS, by contrast was influenced on the European side by labor union strength that steered the research questions towards the impact of computers on jobs, existing skills, and the social organization of work pioneered by Enid Mumford (Mumford and Henshall, 1978). Union influence drove researchers into participatory design (PD) and to computerization efforts that recognized the collectivity of users in their larger work contexts (Bermann and Thoresen, 1988; Bjerknes *et al.*, 1987). This led to inquiry into site-specific work practices, the social reasoning skills involved in production, and collective intelligence or "practice", drawing attention to descriptive accounts of social units and away from individual psychology and metrics.

Kristen Nygaard (e.g. Bjerknes *et al.*, 1987; Nygaard and Bergo, 1975) was a key mover in connecting the union interest into the systems development practice. In the US, Markus' "Power, Politics, and MIS Implementation" (1983) invoked the underlying premise of critical theory without naming it. It introduced the role of power and politics into the discourse about technology and its acceptance. It would have been unusual for a positivistic approach to have unearthed this. At the same time, Markus' work followed an acceptable scientific paradigm, as analyzed in detail by Lee (1989), showing it as qualitative, essentially critical, but with a method defensible by standard scientific criteria. As a complementary move, Gordon Davis, who established the first full program in IS, was perceptively influenced by the observational workplace studies of Mumford, despite his own baseline quantitative focus (Avison *et al.*, 2006).

In terms of epistemic background, for the US, even though positivism was dominant, the hermeneutic management theories of Van Maanen and Schein (1977), Argyris and Schön (1974) and Weick (2001) were formative, influencing many management students who took up research in IS. Hirschheim and Klein (Fitzgerald *et al.*, 1985; Klein and Hirschheim, 1983, 1985), and Boland (1978, 1979, 1986) nurtured generations of critical hermeneutics research efforts. In the UK, Land (Galliers and Land, 1987; Land and Hirschheim, 1983), also fostered generations of students. The work of Checkland (1981), who was influenced by Mumford's work, is foundational to the Scandinavian systems development tradition as well as to UK researchers, notably Avison and Wood-Harper (Wood-Harper *et al.*, 1985) and their students.

While we had observed, then confirmed, differing institutional frameworks (Europe vs. US, organization vs. individual, source discipline contrasts, diverse conferences and journals vs. gatekeeper conference), we can only validate these measures with the social study of science. We draw on Whitley (2000) along with Knorr-Cetina (1999) for that perspective (see Section 4).

This framework helps structure the differences on a spectrum of epistemic and social control. Whitley describes polar differences ranging from physics to literature. IS and HCI are not as dramatically different as these, but there are enough institutional contrasts to make the case that

their epistemic cultures are different, and that these differences affected their theoretical foundations and accepted criteria for scholarship. These epistemic differences in turn explain why critical theory was not evident in HCI until the 21st century, starting with a more cultural focus (Harrison *et al.*, 2011) and turning lately to a political one (Bardzell and Bardzell, 2013, 2015; Blythe, 2007; Sun, 2004, 2012, forthcoming).

As a middle ground, the CSCW conference has varied origins, relying greatly on ethnography, and specifically ethnomethodology (Button and Dourish, 1996; Greif and Suchman, 1986; Suchman, 1987), at the beginning. In the early days there were discussions about splitting CSCW into two conferences, one for computer scientists and one for the social scientists. Though credit must be given to researchers in CSCW for addressing philosophical issues in the methodologies (Dourish, 2006; Schmidt and Bannon, 2013) for the most part, neither the emancipatory sense of Critical Theory, nor the literary one is particularly evident until recently, despite the advocacy implications of much of the work.

Klein and Hirschheim (2008), discuss the identity of the IS field with a social analysis of its community structures. The aim is a better understanding of the ways the IS research community differentiates itself into diverse constituencies, which they call communities of practice and knowing (CoP&K), and how these constituencies interact in the field's complex processes of knowledge creation and dissemination. Their recommendations build on three fundamental ideas:

- a continuously updated history of the field could be an important contribution to support boundary spanning and identity formation;
- the nature and role of fundamental criticism for the IS research community and why it is necessary for the field's future to pay more institutional attention to it; and
- how to improve understanding and communication within each paradigm constituency across a broad subset of different CoP&K through building a shared sense of collective historical accomplishments.

This is a primary goal of the present monograph. Another is to create cross-disciplinary discussion and build on related work in the fields. This is important in the era of platforms with global reach, and the concurrent development of powerful Artificial Intelligence (AI) and analytics capabilities that both intrude on daily life and try to emulate human intelligence. The potential of these trends is both exciting and highly problematic (Churchill, 2017; Knox and Nafus, 2018; Nafus, 2018; Zuboff, 2018). A critical perspective based on an understanding of core social capabilities, needs and functions is essential.

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