

# Critical informatics: New methods and practices

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## ABSTRACT

While social informatics (SI) is uniquely positioned to examine the technical and organizational properties of information and communication technology (ICT) and associated user practices, it often ignores the cultural mediation of design, use, and meaning of ICTs. Critical informatics, more so than normative and analytic orientations to ICT, offers possibilities to foreground culture as a sensitizing context for studying information and technology in society. This paper articulates a new critical informatics approach: critical technocultural discourse analysis (CTDA) as an analysis employing critical cultural frameworks (e.g. critical race or feminist theory) to jointly interrogate culture and technology. CTDA (Brock 2009) is a bifurcated approach for studying Internet phenomena integrating interface analysis with user discourse analysis.

This paper outlines CTDA, providing examples of how its methodological flexibility applies to examining varied ICT artifacts, such as twitter and search engine phenomena, while maintaining a critical perspective on design and use.

CTDA is an important tool for critical informaticists that contributes to building understanding of technology as culture, grounded in user perspectives and real-world practices.

## Keywords

Critical informatics, social informatics, methods, critical technocultural discourse analysis

## INTRODUCTION

*“culture eats strategy for breakfast, technology for lunch, and products for dinner, and soon thereafter everything else too.” -William Aulet*

The current information environment is characterized by the rise of ‘app’ ecosystems, increased mobile access to broadband and web services, and the shift to ‘cloud’ computing.<sup>1</sup> While these advances undoubtedly lower barriers to information and communication technologies

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<sup>1</sup> Your ‘cloud’ is someone else’s data-center; i.e., a shifting of storage from multiple individual material instances to co-located, massive server farms with extremely high-speed connections and low-latency.

(ICT) in terms of accessibility and usage, they also obfuscate the processing of information, structures of code, and linkages of information across technical and institutional networks. Correspondingly, cultural patterns of information behavior are mediated by new social practices of mobile and desktop computing use as well as changing perceptions of the need for an “always-on” information society. These practices are embedded in broader socio-political contexts including widening wealth gaps, the increasing informationalization (and subsequent defunding) of social support services, ubiquitous surveillance initiatives in the name of ‘security’, and the commodification of personally generated metadata. Taken together, these phenomena, fostered by the spread of ICTs in everyday life, point to the need for critical perspectives on the role of information in society.

Social informatics is uniquely situated as an analytic process to assess ICT infrastructure, usage, and design, thanks to its operationalization of computerization from social and institutional perspectives. However, social informatics’ strength is also a weakness; social analyses of technology use (e.g., social network analysis) are often oblivious to cultural beliefs powering institutional and individual technology use.

All is not lost, however. Day (2007), writing on Kling’s interpretive and critical moves in social informatics, observed that SI offers possibilities for critical approaches to information and communication technologies. Critical informatics (CritInf) shares an empirical orientation with normative and analytic social informatics; that is, an emphasis on the technical and organizational properties of the ICT practice/artifact under examination. Where CritInf differs from normative and analytic SI is in foregrounding culture as a mediator for ICT uses in any given social context. SI’s original focus on organizational technology adoption elided larger cultural contexts of race and gender also configuring technology design and use. While it is entirely possible that the organizational cultures of the 70s and 80s were egalitarian, meritocratic spaces free of bias and discrimination, we are of the firm belief that today’s “brogrammer” culture (Tiku 2014) would be immediately familiar to the pioneering women and minorities who integrated software companies, engineering firms, and

corporate enclaves. Thus, the CritInf frameworks discussed here draw from critical race and critical feminist perspectives, while also being open to the utilization of Postmodern, Marxist, or ethnomethodological approaches to ICT research. In this paper we discuss Critical Technocultural Discourse Analysis (CTDA) as a flexible methodological approach integrating critical cultural analytic frameworks in service of CritInf objectives. We provide examples of research centered on different ICT artifacts-- twitter and a search engine-- that used CTDA, exploring CTDA's utility and flexibility for CritInf.

### **WHY CRITICAL INFORMATICS?**

Kling (1999) defines social informatics as "the interdisciplinary study of the design, uses and consequences of information technologies that takes into account their interaction with institutional and cultural contexts." Research in SI has shifted over the years from deterministic impact questions (e.g. Attewell, 1987; Iacono & Kling, 1987) to contextual inquiry examining the social matrix in which technology is located. A central tenet of this approach is the rejection of deterministic models for technology and society; instead, CritInf favors multidirectional models such as those articulated by Pinch and Bijker(1984).

SI is comprised of normative, analytical, and critical orientations of research (Kling, 1999). Normative approaches make recommendations about design, use and implementation of ICTs, whereas analytical approaches are concerned with developing theories about ICTs in institutional and cultural contexts (Sawyer & Eschenfelder, 2002). The critical approach questions normative claims and assumptions about technologies, and does not automatically adopt the goals and beliefs of those who design and implement ICTs (Sawyer & Eschenfelder, 2002). Critical informatics explicitly engages with the cultural aspects of technology, defined by Pacey (1985) as the values, beliefs, and ideologies that shape the design, use, and meaning of ICTs in society. This requires exploring "disjunctions between popular and professional claims about the social values and uses of information and communication technologies and the empirical reality of such (Day, 2007, p 575)." Day argues that this critical orientation was central to Kling's original formulation of SI, though it has not been as prevalent as the normative and analytic approaches.

Sawyer and Eschenfelder (2002) define SI as a "problem-oriented" field that relies heavily on empirical evidence. Day critiques SI's problem-based orientation, noting that "genre analysis and critical studies are neither defined nor exhausted by empirical techniques as defined by the quantitative social sciences, nor do genre analyses and social critique necessarily lead to solvable problems" (Day, 2007, p. 577). Instead genre analysis and critical studies point to conceptual problematics that may be resolved

through analysis, but not "solved" since they are "not rationally nor empirically structured so as to yield such certainty through analysis" (Day, 2007, p. 577). Reframing solution-centered approaches into critical perspectives on cultural problematics of ICTs allows for broader cultural (as opposed to smaller scale institutional/social) values to be foregrounded as a mediator for ICT design, use, and meaning.

Critical approaches to information and associated technologies have drawn from a variety of theoretical and disciplinary traditions including the Frankfurt school (Dyer-Witherford, 1999; Fuchs, 2009; Vaidhyathan, 2011), historical approaches such as social history of information (MacKenzie, D. A., & Wajcman, J., 1999; Pacey, 1985), and sociological approaches like science and technology studies (Pinch & Bijker, 1984; Latour, 2005) that address culture's influence on technology. Social informatics (Kling 1999; Sawyer & Eschenfelder, 2002), on the other hand, was specifically developed to analyze the intersection of institutions, computers (later information technologies), and people.

SI is frequently insensitive to cultural contexts surrounding social institutions and, in eliding cultural influences, reduces its analytic efficacy. Fusco et al (2010), for example, argue against the use of critical theory in social informatics research. They observe that critical social theory and critical information theory share the attributes of being "sensitive to the lifeworlds of...organizational actors" and recognize that "context is not only important to meaning construction, but to social activity as well" (Fusco, Michael, & Michael, p. 3). However, they stop short of adopting a critical information orientation, avoiding critical information theory's aim of exposing issues of power and justice in ICTs. Fusco et al retreat to a normative informatics in doing so, arguing that instead "the aim of the research is to understand the positive and negative implications of the use of location based social networking in society, not just to look at issues of justice and power" (p. 5).

It is our view that such elisions of power and justice as integral components of social analysis constitutes a willful depoliticization of SI that further underscores the entrenchment of normative and analytic orientations towards technology. CritInf, on the other hand, depends on the integration of cultural context for mapping the meaning of technological artifacts and associated practices from the perspectives of users of technologies. This formulation positions culture and subject as interrelated, and thus demands an interrogation of technology as culture/ideology.

### **CRITICAL TECHNOCULTURAL DISCOURSE ANALYSIS (CTDA) TECHNIQUE**

Day's analysis serves as an intervention and justification for the use of interpretive methods (e.g., discourse analysis)

and theoretical frameworks (e.g., critical race or feminist theory) to interrogate social aspects of ICTs. Critical Technocultural Discourse Analysis (Brock 2009; Sweeney 2013) is one such approach; a multimodal set of techniques for studying Internet phenomena and artifacts.

CTDA applies critical cultural and, importantly, technocultural theories to ICT artifacts, paired with accompanying online texts to analyze information technology's cultural and discursive construction. Joel Dinerstein (2006) argues that American technoculture can be understood as a matrix of six qualities: progress, religion, modernity, Whiteness, masculinity, and the future.

Technologies are never constructed in a vacuum; every artifact embodies these ideals for its users, designers, marketers, and investors. Dinerstein extends an argument made by James Carey (2008) that communication technologies transmit beliefs encoded within information. Carey (2008) added that communication technologies exert material and ideological control over time and space, thereby cementing Western imperialism and dominance.

Moreover, these technologies extend the range of reception of ideas while diminishing the amount of participation to discuss those ideas (Carey, 2008, p. 136). Thus, technoculture incorporates a set of interrelated narratives that create a paradigm for understanding the past as well as a potential future, centered on technological religiosity that Dinerstein argues is deeply rooted in the American cultural imagination. The benefit of technoculture as a lens is that it exposes how ideologies of race and gender are inherent in the conditions of modernity, capitalism, and technoscience.

This integration is crucial for forging ideological linkages between seemingly disparate phenomena, technologies, social actors, and institutions as a precursor for movements towards social justice.

A second theoretical premise of CTDA is the recognition that relations formed within a structure can exist out of time and place (Giddens, 2013, p. 17). Where Giddens limits these relations to the social sphere, CTDA takes the additional step of arguing for the existence (persistence, moreover) of cultural patterns of behavior across social systems and institutions. For example, the culture of 'brogrammers' incorporates Dinerstein's (2006) technocultural values of masculinity, whiteness, modernity, and patriarchy, in high-tech computing and entrepreneurial venues (e.g., GitHub) where the technical values of rationality and meritocracy are ostensibly the guiding principles of their high-tech endeavors. Thusly argued, racism, sexism, and other cultural ideologies can and should be clearly identified in the technologized social contexts that SI studies.

CTDA draws energy from Nakamura's (2006) assertion that Internet studies must consider form, user, and interface but also the underlying cultural logics for each. As such, Althusser's (1971) concept of 'interpellation' serves as a

guiding principle for CTDA analysis, where the ways in which users articulate themselves through the information technologies they use everyday is a central point of the analysis. CTDA simultaneously interrogates culture and technology as intertwined concepts, while formulating technology use as part of the reciprocal relationships of cultural representations and social structures. This critical cultural approach avoids deficit-based models of minority technology use; it also critiques normative practices of computerization while unpacking the influence of culture on design and use.

With this in mind, Brock's (2009) formulation of CTDA recommends the analytical integration of the technological artifact and user discourse, framed by cultural theory, to unpack semiotic and material connections between form, function, belief, and meaning of ICTs in society. CTDA approaches user discourse in a manner similar to critical discourse analysis in that it is focused on making connections between "texts" to larger social systems of power and domination (Fairclough, 2004; Van Dijk, 1993; Wodak, 2001). Day (2007) identifies genre and discourse analysis as central means for "intervening in the production and reproduction of unwarranted beliefs in the social value and use of certain technologies" (p. 587). CTDA borrows heavily from Wodak's (2001) "discourse-historical approach" (D-H) to critical discourse analysis. D-H uses the hermeneutic circle to situate the interpretation of texts within sociocultural contexts, particularly historical analysis. In the hermeneutic circle, there exists reciprocity between texts and contexts, such that one cannot be understood without the other. Whereas Wodak integrates socio-historical frameworks for interpretation of discourse, CTDA explores technocultural mediation of discursive actions embodied as online discourse and digital interfaces.

The challenge (and beauty) of critical discourse analysis is the mediation between large social theories, such as gender and race, and the specific, concrete object of analysis, or the "text." Wodak defines text as the "materially durable products of linguistic actions" (2001, p. 66). As this quote suggests, texts have historically been treated as linguistic actions—written language or speech. However, Fairclough (2001) expands this definition to include visual images, media, and non-verbal cues such as body language, arguing that all of these are symbolic processes. CTDA borrows this extended definition of text in approaching ICT, particularly Internet artifacts. The Internet, as a social symbolic structure, represents and maintains Western culture through its content, design, and practices. Pacey (1985) noted that popular conceptions of technology neglect beliefs about technologies and encourage perceptions of it as 'value-neutral', which reinforces existing social hierarchies. Internet users, content providers, and designers filter their Internet experiences through pre-existing sociocultural frames while they

redistribute online resources (e.g., attention/audience, cultural capital, technical capital).

Selfe and Selfe (1994) note that computer interfaces have semiotic messages built in that betray an alignment along the axes of class, race, and gender. For example, they point to the metaphor of the computer desktop, which connotes a professional, middle-class workspace, as opposed to other configurations that might be referents to domestic spaces (a kitchen table), or craftsman spaces (a mechanic's workshop). Galloway (2008) describes the interface as "a control allegory (p.935)," highlighting the metaphoric nature of interfaces and the concomitant ideologies required to approach them. To this end, CTDA employs the concept of "affordances" (Hutchby, 2001) to operationalize the technical and cultural features of technological interfaces, which are often the only point of contact where many users encounter ICTs. Hutchby views technologies as texts that are written (designed and configured), as well as read (interpreted by users, consumers, audiences). Affordances "constrain the way they [technologies] can be written or read" (Hutchby, 2001, p. 447). This suggests that while users may have a range of interpretations and functions available to them when they are engaging with ICTs, that range is not unlimited. Technologies are designed with preferred users and interpretations in mind, though users, in turn, may use and interpret technologies in unexpected ways. Consalvo and Dutton (2006) describe affordances in video game interfaces as "information and choices that are offered to the player, as well as the information and choices that are withheld" (para. 17). CTDA takes a similar tact in articulating an approach to interface analysis, contextualizing the interface designs and choices that reveal ideological aims and possibilities for readings by users.

### **CTDA IN PRACTICE**

CritInf positions both the material and semiotic aspects of technology as socially and, importantly, culturally constructed. Accordingly, CTDA applies a bifurcated approach to Internet phenomena that examines the technological artifact along with user discourse about the artifact. Internet technologies are multivalent, multimodal entities that comprise both material and semiotic aspects.

Hardware, software, content, user practices, and interpretation, are all the outcome of complex social processes shaped by broader cultural values and ideologies.

CTDA's strength is in drawing connections between the form, function, belief, and meaning of technological artifacts and associated practices. To demonstrate the flexibility of CTDA in practice, this section will describe two applications of CTDA as an approach for researching ICT artifacts, namely twitter and the "Ms. Dewey" search engine, as cultural objects and sites of interpellation.

#### **Twitter**

Social informatics research into Twitter use typically draws upon instrumental measures of participation (e.g., number

of tweets, number of followers) to measure 'social' participation in the service. While these approaches are capable of quantifying social interactions, cultural context is rarely discussed outside of its role as conversational catalyst. Analyzing Twitter as an information source or technological artifact captures data about social use and information types, but elides cultural communicative behaviors. Media studies research offers greater insights into sociocultural rationales for Twitter use, but typically eschews the influences of racial identity on online discourse.

Since Twitter's discursive coherence is primarily driven by cultural commonplaces, rather than by social features alone, ignoring the role of culture in generating participation becomes a serious omission. While Twitter's temporal, electronic, and structural discourse mediation encourages weak tie relationships between groups through informal communication practices, studies of the topical content encouraging weak tie relationships has been limited to examinations of extraordinary cultural events, rather than everyday discourses. Twitter's massive data set, which includes the content of every tweet, renders the co-location of geographic identity and content fairly easily (e.g., the trending topic algorithm), but does not easily lend itself to discovering ties between content and culture. Twitter's hashtag feature, however, offers a possibility for understanding cultural links to information sharing.

Twitter, as a primarily textual medium, has been unusually forthright about the encoding of discursive conventions into the mechanics and interface of the service. Where many messaging services include limited social mechanics between users to emoticons or private messaging, Twitter took the additional step of incorporating mechanics like the retweet (for attribution) and the hashtag (for conversational coherence and archiving) into the platform. Of particular interest for Brock's (2012) study was how the hashtag, initially conceived as a referential discourse marker intended to organize 'conversations', was co-opted by African American discourse-using members to serve their information needs.

Brock's object of study was the Twitter interface – particularly the platform's reach and discourse conventions – analyzed alongside selected online commentary discussing the Black Twitter phenomenon. Twitter's discourse conventions, ubiquity, and social features encouraged increased Black participation; Black Twitter was Twitter's mediation of Black cultural discourse, or "signifyin" (Gates 1983). In signifying discourse, one 'signifies' by using lexical forms modified by humor or catharsis, cultural commonplaces, and performativity to deliver information to Black interactants and communities. Instrumentally, Black hashtag signifying revealed alternate Twitter discourses to the mainstream and encourages a formulation of Black Twitter as a "social public"; a

community constructed through their use of social media by outsiders and insiders alike. Using a CTDA approach to examine Black Twitter illustrated how culture shaped social interactions on the network. CTDA also showed how Twitter's interface and discourse conventions helped to frame external perceptions of Twitter as a social AND a cultural public.

Ideologically, Black Twitter discourse was criticized as technologically illiterate, 'play', or banal. These commentaries drew from racial ideologies and technoculture, rather than solely with the brevity of Twitter's information presentation. After examining online responses to Black Twitter, Brock closed by discussing how racial and technocultural ideologies shape perceptions of minority tech use. Altogether, Brock's findings regarding discourse, race, and ICTs show technology as a cultural, rather than simply social, endeavor.

### **Ms. Dewey search engine**

Sweeney (2013) used CTDA to interrogate Microsoft's anthropomorphized search engine, "Ms. Dewey" (formerly <http://www.msdewey.com/>), which operated from October 2006 to January 2009. Launched as a viral marketing campaign for Microsoft's Live Search, Ms. Dewey integrated a sleek, filmic Flash-based overlay as part of the search engine's interface to create a fully functional, "experiential" search interface (Mathews, 2007). The filmic interface drew heavily on the trope of "sexy librarian" (or, Melvil Dewey in drag), portrayed by actress Janina Gavankar in pre-filmed clips. These clips were served as responses that 'interacted' with users by providing witty commentary and playful, suggestive responses to search queries, followed by a listing of the more familiar text-based, ranked search results. This project investigated how search engines could be gendered and racialized, as well as how Ms. Dewey's anthropomorphic design revealed specific assumptions about gender, race, and sexuality in the search process.

Sweeney (2013) interprets CTDA's call for interface analysis as a close reading of the search engine to investigate the technological and cultural affordance of both the material and the semiotic interface aspects. The material aspects of the search engine operationalizes the interplay and linkage of user-provided search terms with the scripted search results performed by the Ms. Dewey character as database-driven pairings. The semiotic aspects of the interface are the web design, visual elements, and aesthetics of the interface. Accordingly, her data set gathered fan-archived search terms and search results (visual and audio), as well as user discourses from blogs, internet fora, comments, and reviews about the search engine.

Sweeney's application of CTDA positions both user discourse and artifact as "text". Extending Fairclough's

(2001) definition of text as visual media, the search engine has been "written" (configured) and may also be "read" (interpreted) by users (Grint and Woolgar, 1997). Approaching Ms. Dewey as a textual object locates the search engine as a site of power where technocultural values about gender, race, and technology circulate and are integral in shaping user experience with the interface and, ultimately, the search process.

The interplay between search terms and visual search results creates an additional layer of discursive interaction between user and interface. These interactions reveal gendered and racial logics, once-hidden in the previously text-only search interfaces, visualizing user beliefs through the algorithmically generated responses portrayed by Ms. Dewey. Users are encouraged to control Ms. Dewey; more specifically, to coerce her to perform as a sexualized exotic. Ms. Dewey performs attraction through submissive or domineering behaviors while still under the control of the interface and thus, the user. Sweeney found that Ms. Dewey's search results added cultural relevance, rather than just informational relevance, to the results foregrounding the ideological nature of search. Instead of viewing the search process as an instrumental means to retrieve information, the search process becomes visible as an ideological experiment where the user searches to validate their beliefs about the sexual availability of (brown) womanhood, asserting and reaffirming notions of masculinity and White privilege. Gender and race form the infrastructural elements of Ms. Dewey while facilitating this framing of search.

Our examples showcase how CTDA can be applied to different technologies, namely twitter and search.

Accordingly, they necessitate a slightly different approach to interface analysis, while still keeping to the spirit of CTDA. For example, Brock's CTDA of twitter is less engaged with the visual aspects of the interface, whereas Sweeney's analysis of Ms. Dewey incorporates both web design conventions for search engine interfaces (as exemplified by Google) as well as a semiotic read of the visual images in the interface and representation of the Ms. Dewey character. Though the techniques of interface analysis may differ according to the specifics of the interface in question, the foundations of CTDA as an approach (i.e. the combination of interface analysis with user discourse analysis and critical cultural frameworks) remain in tact.

### **CONCLUSION**

*"the reflective observer...tak[es] a stand that may or may not echo one's subjects but reflects solidarity with their right to their perceptions and interpretations" -Theresa Senft*

SI's origins as organizational analyses of computerization have led to powerful findings about the interplay between

people, institutions, and information technologies. These normative and analytic approaches begin with the institution's definition of its ICT users, along with the chosen technology's encoding of user roles and institutional information imperatives. We are arguing that these are not simply social decisions, but ideological ones as well. In limiting the 'social' to the aims of the organization or the constraints of the technology, SI leaves a gaping hole regarding the influence of *cultural* ideologies lived by the designers, administrators, end users, and publics involved in any technology adoption. If SI wants to become more effective (and predictive) at analyzing ICT usage in large structural systems, then the current approaches aren't working. Structures like race, gender, and class have their own specific logics that continue to operate in any given social arena and are often invisibly mapped onto existing institutional and computational contexts. For example, Whiteness is often the default identity assigned to internet users - but why? Given the lack of embodiment in internet spaces, it's curious that Whiteness (and masculinity) becomes the signifier for online identity. Richard Dyer (1997) offers a compelling answer, writing that Whiteness is the space of the non-specific subject, the disembodied position of "disinterest - abstraction, distances, separation, and *objectivity* [emphasis mine]" (p. 39), while non-whites are marked, raced, and particular. In the disembodied world afforded by the design of ICT artifacts and interfaces, it is no wonder that issues of race and gender receive little attention<sup>2</sup>.

Moreover, when issues of race/class/gender *do* surface in SI research, current approaches limit analyses to local contexts (the institution) as if unconnected to the outside world.

This has the effect of individualizing cultural ideologies as deviant 'instances' instead of tracing them as broad, complex, and integrating systems with concomitant, interlocking narratives. Thus, SIs often operationalizes these structures in ways that reify and reproduce existing inequalities. Non-whites or white women are singled out as special cases and exceptional users, while the systems defining them remain uninterrogated. For example, digital divide research often takes this tack, by identifying marginalized user groups as deficit examples, exhaustively described as "haves" and "have nots." Elite groups (which includes researchers) have superimposed this framework onto poor/rural/non-white user communities to describe their information context. Eubanks' (2007) participatory research with low-income women in upstate New York reveals that marginalized users offer a different analysis based on their lived experiences. One of her participants powerfully renames the digital divide as a situation of

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<sup>2</sup> The recent furor at Github (Tiku, 2014) exposes these concerns precisely, where a place encoded as a meritocratic, open source software firm has been revealed as a space dominated by patriarchy and masculinity, rather than the ability to write clean code.

"technology hoarders" and "technology survivors." This shift in perspective allows for broader understanding of the digital divide as a phenomena where information hoarding behavior can be identified as part and parcel of Lipsitz' (1995) "possessive investment in whiteness." Crawford (2013) notes that the collection of big data as a guideline for distributing social resources suffers from a similar problem, arguing that "Data are assumed to accurately reflect the social world, but there are significant gaps, with little or no signal coming from particular communities".

CTDA, influenced by critical cultural epistemologies, flips the standard mode of inquiry by explicitly privileging the perspectives of people of color and women and other socially marginalized groups.

We began this discussion by pointing to the characteristics of the current information environment. At first glance, phenomena like the widening wealth gap and increased ability to harvest user data may seem unrelated. The strength of CTDA is to link seemingly disparate phenomena in a technocultural framework, creating the opportunity to see continuities with broader ideological systems. CTDA's use of technoculture is part of a multi-faceted theoretical framework that attempts to bridge this gap. Identifying the ways in which technocultural narratives bolster particular arrangements of power provides a starting point for formulating interventions and for identifying counter-narratives. These counter-narratives are valuable empirical data for the remaining facets of CTDA - feminist theory in Sweeney's work and critical race in Brock's - which, when combined with the thick description and close reading of the technological interfaces, leads to a holistic critical cultural analysis of the ICT artifact. CTDA is not limited to examining issues of power and justice, however. A significant strength of this approach is in its ability to interrogate ICT usage from a perspective privileging the minority group's philosophical and ideological approach to the world. While sexism and racism are still present in CTDA analyses (Daniels 2013), the emphasis is on examining the holistic interpellation of the user, rather than simply a resistant or transgressive use of ICTs.

Finally, we are not arguing for SI to abandon its empirical emphasis on understanding ICT use. In our view, current new media and internet research often glosses the ICT artifact, preferring to only focus on either discursive behaviors of the user group under examination or retreating to a high-theoretical perspective on ICT use without examining the encoding of institutional practices or social behaviors in ICT artifacts (e.g., early cyberculture studies).

SI's willingness to interrogate interfaces, design practices, and use contexts is a strength that we will continue to employ in our own work. Returning to Day's concept of the 'problematic' we urge that instead of being solely 'problem-driven', SI employ a critical orientation (if not the one we discuss here) to evaluate the complexities of ICTs in society.

We have outlined Critical Informatics as an opportunity that leverages the critical impulse in SI to foreground culture's mediation of information and communication technologies.

Where social informatics has historically looked at smaller scale/institutional cultural contexts, CritInf considers how broader cultural ideologies, such as race and gender, shape information and technology in society. The integration of critical cultural frameworks into CritInf expands both the type of research questions that can be asked, as well as the range of methods available for approaching ICT end users.

To this end, we have provided examples of how Critical Technocultural Discourse Analysis works as one methodological approach for interrogating technology as culture.

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