Interaction Criticism: A Proposal and Framework for a New Discipline of HCI

Jeffrey Bardzell
School of Informatics
Indiana University
jbardzel@indiana.edu

Shaowen Bardzell
School of Informatics
Indiana University
selu@indiana.edu

Abstract
Though interaction designers critique interfaces as a regular part of their research and practice, the field of HCI lacks a proper discipline of interaction criticism. By interaction criticism we mean rigorous, evidence-based interpretive analysis that explicates relationships among elements of an interface and the meanings, affects, moods, and intuitions they produce in the people that interact with them; the immediate goal of this analysis is the generation of innovative design insights. We summarize existing work offering promising directions in interaction criticism to build a case for a proper discipline. We then propose a framework for the discipline, relating each of its parts to recent HCI research.

Keywords
Interaction, criticism, aesthetics, design, theory

ACM Classification Keywords
H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction
Though the practice of interaction design varies, our field recognizes a more or less standard process of how to practice interaction design: problem definition, user
study, sketching through prototype design, and evaluation [34]. This process has been refined over the past decades to address certain aspects of interaction design, in particular usability, performance, and user satisfaction. Increasingly, we are hearing calls for innovation in more subjective areas, such as aesthetics [31,40,9,19], affective computing [11,24,33], experience design [10,13], and intimate and embodied interaction [18,8]. In the words of Smith [39], interaction design needs to improve its awareness of “the symbolic level of mood and meaning, of sociability and civility”; we need “a language true to the medium of computation, networks, and telecommunications.”

That the problem Smith identifies—the lack of an expressive language of interaction design—is a symptom of the standard process of interaction design outlined above: it lacks a step for interaction criticism. By interaction criticism we mean rigorous interpretive analysis that explicates how elements of the interface, through their relationships to each other, produce certain meanings, affects, moods, and intuitions in the people that interact with them. We say “rigorous” to stress that interaction criticism, like the best film and literary criticism, transcends anything-goes subjectivism and offers instead systematic, evidence-based analyses of subjective phenomena. The purpose of such an analysis is to generate actionable insights for interaction design.

Interaction designers have been practicing interaction criticism all along. No one designs interaction in a vacuum, without consideration of prior or analogous interfaces. But even now, and in spite of promising steps such as [17,38], HCI lacks a rigorous discipline of interaction criticism, that is a stable vocabulary and set of critical practices that can be subjected to discussion and review. Without this discipline, designers’ and researchers’ judgments are hidden from view.

In the process of offering our conceptualization of this discipline, we will refer to analogous fields, including film, literary, visual communications, and fashion theory. Building on these traditions, we offer a framework of the domain of interaction criticism, exploring the analogies between cultural artifact and interface, and between consumer/reader and user.

**Benefits of a Discipline of Interaction Criticism**

A discipline of interaction criticism has much to offer interaction design. Though criticism is often applied in human domains, such as literature, film, advertising, and the sociology of groups, it is grounded largely in philosophy. The philosophy and critical traditions of the twentieth century grapple with notions increasingly relevant to interaction design: representation, beauty, language, self-transcendence, subjectivity, creativity, interpretation, identity, self-determination, and social justice, among others.

To pursue understanding in the subjective dimension of interaction, while continuing the human-centered strategies in use for years, which were derived primarily from phenomenology, interaction designers should add to that new strategies of interpretation developed from the comparatively artifact-centered approaches offered by continental theory, semiotics, and poststructuralism. Development of these strategies, in consultation with thoughtful critiques of them from analytic philosophy along the lines of
open whole new vistas for nuanced interaction design research.

Additionally, this program of research will not only enhance our understanding of the most subjective and difficult to measure aspects of interaction design, but it will also improve the teachability of the field. A standardized vocabulary and body of theory, even with all the usual academic disputes and border wars, provides a domain with a multilevel working space, or clearing, facilitating many forms of relevant discourse. As an example, the theorization of “film language” has been developed sufficiently in film studies to organize introductory student guides [26], practitioner manuals [3], philosophical treatises [7, 32], and philosophical dissent [15].

Interaction Criticism in HCI: An Emerging Domain

Critical stances have entered interaction design more or less explicitly for years. Nonetheless, the collection of these papers is far from constituting a coherent body of research focusing on the agenda of a discipline of interaction criticism. [40] offer a readable overview of some of these approaches; however, their conclusion suggests that the variety of approaches they surveyed, all under the banner of “aesthetic interaction,” are so broad that they dilute, rather than bring into focus, the notion of aesthetics in the context of interaction design.

One recent example of work in the area of interaction criticism is Bertelsen & Pold’s “Criticism as an Approach to Interface Aesthetics” [9]. After making the case for interface criticism as a response to rising interest in the aesthetics of interaction design, the paper offers a formalized guide to interface criticism as a practical approach to interface aesthetics. This guide consists of encouraging interaction designers to consider the following 8-part framework as they study interfaces:

- Stylistic references
- Standards and conformance to tradition
- Materiality and remediation
- Genre
- Functional versus cultural dimensions of an interface
- Representational techniques
- Challenges to user expectations
- Capacity for unanticipated use

Another approach gaining popularity is that of critiquing interaction as a form of experience, and in particular, aesthetic experience [31, 30, 29, 27, 36]. A key strategy in McCarthy & Wright [31] is to redefine the unit of analysis away from the interface, from user or designer intentions, and instead to focus on “experience,” including the internal and subjective notion of “felt experience.” Much of their book is devoted to laying out ways for analysts to gain access to this phenomenon, which is so hard to represent and therefore difficult to subject to analysis. Thus, they lay out critical strategies for understanding the production of meaning in the mind of the user, e.g., the “dialogic” interaction between the self and the other, as described by Bakhtin. They also offer critical frameworks, such as the “four threads of experience”: the sensual, emotional, compositional, and spatio-temporal.
Löwgren and Stolterman [27], relying on different sources, come to a similar position. They, too, replace the goal of "knowledge" with one of "thoughtfulness" and a "reflective mind." Characterizing design theory as "knowledge that can liberate the designer from preconceived notions" or "knowledge focused on creating new conditions for design," their emphasis is on original thinking. To achieve the goal of becoming a thoughtful, reflective designer, Löwgren & Stolterman propose four approaches:

- A sensibility regarding the qualities of designs and design processes
- A developed language, which appears to mean a technical analytic vocabulary
- Reflective thinking, which emphasizes the interpreting subject’s awareness of her- or himself in the development of one’s own thoughts
- Retrospective reflection, which explores the "arguments and ideas that could explain a design"

Clearly, these three approaches are meant as a critical, rather than scientific strategies; that is, their frameworks are not meant as models representing the true nature of experience, but rather as a means to enable people to “think more clearly” and “talk about” the elusive phenomenon of felt experience. The outcome of this strategy should be richly interpretive, rather than analytically precise. Its goal is to generate insight and reflection, rather than to demonstrate or validate tightly formulated truth claims, such as, “prototype B is 20% more efficient than prototype A.”

All of these frameworks offer promise to interaction designers interested in more critical and nuanced understandings of interactive artifacts. In some ways these frameworks compete with each other, and in other ways they are distinct. All of them, for example, offer critical strategies for designers to use when critiquing interactions. Yet in general, Bertelsen & Pold’s framework [9] appears to surpass McCarthy & Wright’s [31] with regard to artifact-centered concerns, but the opposite is true as far as interpreting the nuances of human response. Likewise, Löwgren and Stolterman’s [27] places more emphasis on the designer than the other two.

A stable discipline of interaction criticism would support further work on frameworks such as these, by more clearly revealing their relationships and the gaps left by them. It would stabilize emerging critical vocabularies, simplifying communication among researchers and practitioners. It would also reveal strengths and weaknesses of the state of the art. For example, surveying humanist-inspired approaches in HCI today reveals that the existing literature provides far better coverage of human-centered approaches than artifact-centered ones.

**A Framework for the Domain of Interaction Criticism**

In his *Language of New Media*, Manovich [28] introduces five principles of new media, which he claims are the building blocks of works of digital media, including interfaces. One of these is transcoding. *Transcoding* is the principle that computer files have both a computer layer and a cultural layer. The cultural layer includes categories such as stories, compositions, mimesis, and tragedy. The computer layer includes...
functions and variables, data structures, packets, and so on.

One of Manovich’s key insights is that these two layers—computer and cultural—mutually influence each other (Figure 1). For example, the evolving use of Photoshop has altered our conceptualization of photography, which now gives billions of people everyday access to seamless photographic composites. Likewise, certain computer structures are becoming cultural forms in their own right: Manovich describes the database as originally a computer form that is also becoming a cultural form. Other theorists, such as [25] have argued that the hyperlink is a new form of punctuation, because it is a marker that establishes relationships between two text units, in much the same way as does a semicolon or comma.

We agree with Manovich’s overall characterization of the mutual interaction of cultural and computer layers, but we feel the key terms—cultural and computer—need further operationalization, if they are to be directly useful for interaction design. To provide more useful definition to these terms, we considered the major categories, or problem spaces, of traditional criticism: creator, artifact, consumer, and social context. Thus, in our sketch, we operationalize Manovich’s notion of the cultural layer as comprising concerns relating to these four areas.

Likewise, we can similarly identify problem spaces at the level of the computer/interaction layer: interface designer, interface, user, and social ecology. In doing so, we are shifting Manovich’s conceptualization of the computer layer as describing the guts of computer systems (algorithms, data structures, packets) toward a focus on interface and interaction, because interface/interaction is the level of computing immediately available to the user.

The two sets of categories on the two layers are roughly congruent to each other (Figure 2). They have the benefit of matching ways that theories of criticism themselves divide theoretical predispositions. For example, auteur theory in film emphasizes the role of the director [7]; text-centered orientations are privileged in any discipline that uses the metaphor of “language” to characterize the building blocks of the art, as in the “language of fashion”; in literary theory reader-response criticism privileges the role of the reader; Marxist and feminist theories across the arts, privilege the significance of social context.

**Interaction Designer as Creator**

Theories of authorship traditionally focus on the biography, intentions, and psychological condition of the author. For example, the literary critic E.D. Hirsch advances the proposition that literary interpretations can have “validity” in the scientific sense. The contents of a valid interpretation are understood to be intrinsic to the text, placed there by the intention of the author, and decoded by the reader [22]. Other hermeneutic theories of authorship explore ways that it is possible for a reader to understand the intentions of an author, given only the text. This possibility is described in Gadamer [21] as a careful fusion of the respective lifeworlds of author and reader, where in that juxtaposition meaning is able to emerge.

Also popular in continental theory were poststructuralist notions of authorship, famously expressed with Barthes’ [6] slogan, “the death of the author,” but also
developed by Foucault [20] among others. This idea has been widely misunderstood, and as a result its significance has arguably been overlooked. The death of the author was used in poststructuralist theory to problematize the unity of the author as a single, coherent subject of discourse.

To summarize, the problem space of authorship in continental theory focuses on the relevance and availability of the author’s intention during the historical moment of creation as well as on issues of who gets to control the text’s meanings. If any field has accepted the death of the author, surely it is HCI. As much as many interface designers would like to be treated as Hirsch’s author, which would suggest that it is the user’s obligation to figure out and proceed in accord with the designer’s intentions, the fact is HCI has long embraced the opposite position. The user matters more than the designer, and design research is often largely synonymous with user research.

In practice, such as in participatory design [58,61], the agency of the designer is systematically ceded to users from the very beginnings of the process. In interaction design theory, as we saw earlier in the work of Löwgren and Stolterman [27], the role of the designer is to cultivate skills to transform her- or himself through a self-critical process. [37] not only deny the designer the authority to specify the meaning, but they challenge whether interfaces should even have a single, as opposed to more than one, meaning. HCI consistently and creatively rejects the notion that the meaning and use of an interface or system should be anchored in the historical designer’s intentions. Of course, these points should not suggest that designers are unimportant or play no role—but rather to draw focus to the significance of the meaning-giving consumer/reader.

**Interface as Cultural Artifact**

The individual cultural artifact, often called “the text” regardless of medium, been the locus of several major theoretical movements of the twentieth century. Major problem spaces include the nature of meaning and signification, relations between form and content, and the relations among texts in a tradition. Three text-based theories in particular have come to have some influence in interaction design and are worth discussing here: formalism, semiotics, and intertextuality.

Formalism was a movement in the early twentieth century that emphasized the formal character of linguistic features of texts, such as rhetorical devices, phonetic patterns, generic features, and syntactic arrangements, to argue for a material basis for their socio-ideological meaning. In other words, the formalists claimed that linguistic analysis of text offered an objective basis for literary analysis and criticism [4]. The work of the formalists, and in particular Bakhtin, have suddenly become important in HCI, thanks to a number of works that have appropriated Bakhtin to shed light on experience design, e.g., [31,2,29].

The next generation of formalism was semiotics, represented by theorists such as Barthes, Eco [36], and in film, Metz [32], based on the work of the linguist Saussure [35]. Semiotics uses natural language as a model for many other forms of communication, spreading the strategies of linguistic description to phenomena other than human language. Following Saussure, semiotic analysis focuses not on the collection of meaningful elements in a cultural artifact,
but rather the relationships among the meaningful elements in a work. Semiotics has been appropriated by both the engineering [1,16] and critical sides of HCI [5].

Intertextuality is the poststructuralist concept that replaces romantic notions of a coherent, original creation of a genius author with a notion of the text as a pastiche of different texts, written by many authors. This concept has been developed in new media theory by [12], using the term “remediation” to describe the ways that meanings from older media are appropriated and reused in newer media. We have seen already that [9] make remediation one of the eight categories of their framework, operationalizing it with questions such as, “Consider how the interface draws on the materiality of other media (e.g., text pages, photography, cinematic language, control panels).” They continue to offer one description of innovation in interaction design, grounded on this poststructuralist notion of intertextuality: “innovation occurs when the materiality of the interactive artifact is used in new manners or when old media are remediated in new ways.”

User as Reader/Viewer
At stake in the problem space of the reader and user are the mechanisms by which the reader/user comes to understand an interface through the process of interacting with it. One of the most productive insights that emerged in reader-centered theory of the twentieth century was the notion of reading as an event, activity, or performance [23]. The temporal nature of reading denies reading abstract unity and calls attention to the construction of meaning as a process. This in turn destabilizes the text, since it never can be performed all at once, and simultaneously calls into question the text’s authority over the reader; the reader performs the text. Finally, these notions make urgent questions about what constitutes a “good” or “competent” reader.

This line of reasoning anticipates issues that are even more obviously relevant for interactive systems than literature, because interaction, like reading, is performed over time. Through interaction, software applications change state, a more literal transformation than the metaphorical destabilization of the text. Additionally, the user desires and expects control over the application and any meanings that through its interactions. A recent example of this sort of thinking in the context of HCI appears in [37]. The authors critique the notion that a given system should have a single authoritative meaning. They observe that user interpretation in HCI is traditionally considered a problem whose solution is typically either for designers to do a better job of anticipating user mental models, or for users to change their mental models to accommodate the system. Second, the authors question the assumption that there necessarily ever needs to be a single, authoritative interpretation. They offer SMS as an example: it facilitates coordination for businesspeople, social connectivity for teens, and offers a "method for passing wireless control signals" for hackers. This approach to design enables users to appropriate the technology more effectively: “If people are able to play a substantial role in determining the meaning of systems, this implies that they will be actively engaged in the process of understanding both the system and its situation of use.” The affinity to
reader-centered theories is unmistakable, as they incorporate notions of use as an emergent process, a system "destabilized" in the sense that its meaning shifts through use, a situation in which users give the system meaning in real-time as they use it, and notions of the ideal user as emergent.

**Social Ecology as Social Context**

Users of technology are a part of the social ecologies in which they work, live, love, and take rest. Our technology-mediated networks are proliferating, especially in the era of Web 2.0, where we participate in social networks including MySpace, Facebook, our cell phone contacts and instant messenger friend lists, Flickr, amateur multimedia communities, 3D immersive virtual worlds like Second Life, and so on.

The primary question of this category is how users' participation in various technologically mediated networks shape their activities, interpretations, and relations with others. Several HCI and information science-related disciplines have stepped forward to address issues such as these: computer-supported collaborative work, computer-mediated communications, social network analysis, and activity theory, to name but a sample.

**Summary**

The purpose of this framework and summary obviously is not to offer a detailed description of interaction criticism, but rather to create a high-level sketch of the field. In doing so, we hope to have shown a rich diversity of strands of critical inquiry already available, as well as how they can be, or have been, applied in interaction design. Additionally, our sketch can help clarify relationships among different critical traditions, perhaps helping interaction designers evaluate their utility for a given interaction design problem.

Another benefit of the sketch is that it helps reveal lacunae in interaction criticism. We highlighted how HCI's privileging of human-centered approaches has led to comparative neglect of artifact-centered criticism. As the sketch exposes these gaps, it also reveals the critical traditions that HCI tends to rely on, such as phenomenology and more recently formalism, at the expense of others, such as poststructuralism.

**Conclusion**

If HCI is to have an "art-science balance," it will have to do more than opportunistically take bits and pieces from the arts and humanities and insert them into an otherwise-unchanged scientific process. It will have to recognize the subset of HCI problems that are best dealt with by the arts and humanities, and it will have to engage with humanist theories and traditions as equal partners to film, literary, fashion, and art critics.

At the same time, HCI's increased interests in the arts and humanities should not displace the manifest successes of scientific approaches to interaction design. The rise of leisure, ubiquitous, and mobile technologies has created a demand for more interpretative and reflective approaches to design, and critical approaches stand ready to answer the call. But they need to be used with rigor, and doing so means engaging with the theory of interaction criticism.
References


