

Guest Editors' Introduction**UNTITLED: EMERGING CULTURAL FORMS
IN THE DIGITAL AGE**

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The age of mechanical reproduction had profound effects on the creation, distribution, and perception of art and other cultural forms (Benjamin, 1992). As the age of digital reproduction progresses, change is becoming equally, if not more, radical. The speed and scale of technological development presents a series of complex challenges for research. This has become evident in human-computer interaction (HCI), a field of study that emerged from “man-machine studies” (Dix, Finlay, Abowd, & Beale, 1998). As well as acknowledging the existence of women, the new title reflected the shift from the mechanical to the digital age; but, in the last 5 years, there have been such major changes in the study of HCI that this title now seems dated. When computers were largely confined to the workplace, it was clear that interacting with them was a specialized activity that necessitated study. Computing technology is now a part of the way we cook, clean, work, communicate, and play; it is, as the title of this journal declares, a human technology. HCI as a title seems at once too narrow and too broad. It includes interaction with microwaves, dishwashers, and credit cards but also the creation of image, music, and text. Emerging technologies offer new possibilities for the creation and delivery of artworks, new modes of operation within artistic communities, alternatives to the traditional view of galleries, and new means of appreciating older cultural forms.

Culture and creativity are, of course, inextricably tied to technological developments. The rock paintings of the Stone Age would not have been possible without tools, like charcoal, for

making them. The development of oil paint and perspective were as crucial to Renaissance painting as patronage (Berger, 2001). Literary historians note that the existence of the novel was dependent not only on the invention of the Gutenberg press but also the development of a literate populace with enough leisure time and money to form an audience. The new cultural forms of the 20th century were based entirely on technological developments. The reproduction of sound led from Edison's inauspicious recordings to the revolution in popular culture epitomized by the Beatles. The reproduction of images led to cultural forms so successful that it was, and still is, feared that film and television may eclipse earlier technologies like the printed word. The technological changes we are currently witnessing are not without precedent, but human lives have not been changed so fast since the industrial revolution.

New interactive technologies have colonized most, if not all, of our cultural practices within just 20 years. From the development of on-line galleries, to on-line gaming communities, to Web sites that allow us to share music or photographs with our friends and family, we are seeing new forms of expression and a subtle change in our expectation of what is possible. Access to a computer and the Internet equip people not only with the means of production but also distribution. Social networking sites allow users to post blogs, photos, MP3s, and videos. Membership at the social networking site MySpace has risen from nil to 47.3 million in the 2 years since its inception to the time of writing (Koblum, 2006). YouTube is currently even more popular and supports home videos and films appropriated from other media like VHS or TV broadcast. This, without mentioning the vast on-line archives of digital art per se, indicates the kind of far reaching change that technology is making at the beginning of the 21st century. In this special issue, we have tried to look at the new trends in art and design in terms of three intersecting perspectives: culture, creativity, and technology itself.

CULTURE

Culture has been described as one of the two or three most complex words in the English language (Williams, 1988). It has been defined as narrowly as a collection of stories and as widely as the sum of lived experience. Cultural studies is increasingly taught as a field of study in universities and, perhaps unsurprisingly, it is a tangled, multiperspectival, and contentious discipline. However, there are two methodological traditions within it that are increasingly relevant to HCI: ethnography and semiotics. The first is relatively well known and widely used; the second is less well known but increasingly recognized as important.

Ethnographic methods were principally developed in the field of anthropology where (typically) Western field workers studied nonWestern societies. In the early 1960s, pioneers in the nascent field of cultural studies began to turn these analytic tools onto Western society itself. A strong tradition arose in the study of subgroups and subcultures, such as street corner kids, working class school children, and bikers (Willis, 2000). These studies focused on the ways in which participants themselves made sense of their everyday experiences. The problems that HCI attempts to address are intimately linked to the minutiae of everyday life and it is perhaps for this reason that the work of ethnomethodologists such as Garfinkel and Sacks became influential in the domain (Lynch, 2006). Many of the user studies in HCI draw on

ethnographic traditions and one of the papers in this collection (Mounajjed, Peng, & Walker, this issue) describes the uses of ethnography in the development of an interactive artwork.

Methods of semiotic analysis were largely drawn from literary theory, building on the insights of Saussure and Peirce about the relation of signs to meaning (Eagleton, 2003). In the early 1960s, literary critics such as Roland Barthes turned their attention from high to low culture and read the texts to be found at large in the world. The same rigor and attention to detail that had been applied to the novels of Balzac were applied to the interpretation of such cultural products as a wrestling match and a spaghetti advertisement (Barthes, 1993). Barthes analyzed not only what the representation denoted but also what it connoted. For instance, the red, white and green in an advertisement for spaghetti connotes Italy though the pasta may be made in America (Barthes, 1993). There is a small but growing literature in HCI that draws on semiotic work to consider the denotative meanings implicit in designs (e.g. Andersen, 2001; De Souza, 2005; Light, 2001; Bardzell, this issue). Semiotic analyses of cultural artifacts such as Web sites or authoring tools lead to very different insights to those gained through traditional usability tests. Increasingly HCI practitioners are turning to other forms of analysis drawn from the wider humanities (Wright & Finlay, 2003).

CREATIVITY

Creativity is also a highly contested term. In 2001, Greene undertook an analysis of the previous 5 years of psychology literature on creativity and produced an inventory that included 42 models in seven broad groups. Greene (2001) criticizes the lack of self-conscious application of creation process models that he found, arguing that none of the famous design colleges in the world teach creativity dynamics as such. Clearly, an understanding of process is not a prerequisite to engaging in it.

For our purposes here, we can make a crude distinction between theories of personal creativity and of culture-altering creativity. Other dimensions include where creativity is situated: from regarding it as an emergent property of interacting environmental factors of which human agency is only one, to the trait models that attribute it to personal qualities in the individual. A Romantic notion of design continues to pervade much ostensibly post-modern technological thinking (Coyne, 2001), despite competing narratives based in practice.

Explanatory theories differ in their level of emphasis, in terms of what is required cognitively, socially, and politically to support the creative process. And more subtly, some acknowledge that one can be creative in the choice of methods, tools, and materials as well as in what one produces, and then can trace the relationship between process and outcome.

Of course, the meaning of creative processes shifts according to a society's priorities. Creativity is associated with practical novelty and the process of innovation in industrialized societies, which prize the original and the authentic. Cultures that are primarily employing hand tools and striving for consistency of form and representation may value dexterity with materials more highly than twists of imagination. The transition from paintbrushes and cellos to digital tools alters our sense of what creativity is by changing our relationship with production and dissemination. As mechanical reproduction has given way to digital reproduction, we see an evolution from practices concerned with differentiating similar products to those that manage the identity of identical ones. If two pieces of code are

identical in a way that two physical objects never will be, and there is no degradation in making copies, then what does this mean for the act of creation? Intellectual property, and the commercial values that accompany it, attempt to constrain what constitutes creativity, be that in the field of music or digital art. Simultaneously, sampling (the “borrowing” of parts of others’ work for reuse in another form) and mashing (building applications that combine content from more than one source into an integrated experience) become fresh forms of expression that reflect the new reproducibility.

TECHNOLOGY

More than just the tools we use, technologies are components in the cultural context of production, reproduction, and mediation. Ranges of new skills are now at the fingertips of the technology-savvy generations, where once they were the domain of specialist engineers and programmers. Artists are learning electronics, programmers use graphical interfaces, and designers are learning how to code. The computer hacker, so feared in the 1980s, has almost been reinvented as a creative and invigorating figure in the mold of the Duchampian trickster, appropriating and repurposing technologies from everyday surroundings to solve local problems or for amusement. Communities are emerging that thrive on such practices.

A number of different theorists have attempted to identify the characteristics of these new technologized media forms. Many of their ideas are similar, but few of them offer terminology that provides a clear definition of what the fundamental features of interactive media are. Largely, this is because there are wide ranges of interactive media types that do not always combine the same characteristics.

Paul (2003) classifies a number of characteristics of the new medium; in particular, she notes that its features are recombinant, interactive, participatory, dynamic, and customizable. Packer and Jordan (2001) also provide a categorization of the characteristics of multimedia. They include: integration, interactivity, hypermedia, immersion, and narrative in their definitions. Similarly, Manovich (2001) provides another list of characteristics, taking care to separate some of the differences between old and interactive media. Essentially, Manovich’s interactive media characteristics are numerical representation, modularity, automation, variability, and transcoding.

While there are many different kinds of terminology used to describe new mediating technologies, it is clear that many of them have overlapping descriptions. However, the diversity and rapidly changing evolution and appropriation of technology ensures that any attempts to pinpoint its characteristics are immediately challenged as new trends emerge.

LEONARDO NET AND THIS SPECIAL ISSUE

The origins of this special issue lie in the discussions that have surrounded the workshops and events of the Leonardo Net¹ over the last 2 years. Emerging from a concern within HCI to engage with an increasingly technologized society, Leonardo Net has been building a radically interdisciplinary research network to explore issues of culture, creativity, and interactive technologies. Concerned with the interface between arts, technology, and

interaction design, the network draws on researchers from both sides of the arts-science divide, aiming to develop an understanding of how new interactive technologies are changing our cultural and creative practices.

This special issue brings together five articles that reflect the rich diversity of work that addresses emerging cultural forms. Before moving on to describe these contributions in detail, it is important to acknowledge the challenge of researching and writing in this highly interdisciplinary space. Cultural theory has a fundamentally different validation system from the empiricism of HCI and yet the two meet in discussing the adoption and use of new digital forms. The emphasis on practice in design research brings a third set of values to bear. Each author, in contributing to this issue, has had to meet the needs of the diverse communities of their readers. Design cannot exist without diagnosis and evaluation; theory cannot stand without some practice to apply it to; and analysis must acknowledge its philosophical underpinnings. So the work reported here is spread among fields, drawing on methods and theory from a variety of disciplines, and, we believe, is the stronger and more interesting for it.

The Papers

Jeffrey Bardzell offers a concise theoretical overview of creativity from three very different perspectives: HCI, poststructuralism, and technological determinism. Not only does Bardzell illustrate semiotic theory, his novel examples serve as an introductory course to must-see Internet viral videos. This paper considers new forms of technologically enabled creativity from *machinima*, where game players can use their game engines to script short films, to *mashups*, where users splice together found sound and video to make something new. Bardzell makes a convincing argument for a semiotic analysis of authoring tools, arguing that aspects of software functionality, such as ease of use and visibility, determine the most popular forms of production.

Russell Beale offers three examples of ambient art that attempt to convey information creatively. He describes the design and implementation of three systems: a news montage, a weather picture, and an activity Mondrian. The first two represent information derived from news and weather broadcasts with pictures from public photo collections; the last represents activity information on people moving through a building in abstract forms inspired by the paintings of Mondrian. Each of the pieces is evaluated and Beale reflects on the challenges still to be met when conveying information through ambient art.

Sally Pryor is an artist who has produced two multimedia art pieces inspired by the philosophical approach to language known as integrationism. Her article describes how she applied this perspective to her own practice to create artworks that are both exemplars of the theory and a playful exploration of meaning-making. She is inspired by the work of Roy Harris, emeritus professor of general linguistics in the University of Oxford², who explores writing as both a communication mechanism and a spatial phenomenon that is qualitatively different from speech. Her fascination with this work manifests in a use of scripts and other images blended to become dynamic signs. She links the creation of meaning with the movement of forming letters using interactive rollovers in her designs. The two works she describes, *Postcard From Tunis* and *Postcards From Writing*, are set in the context of her journey as an artist and her encounter with poststructural theory.

Mounajjed, Peng, and Walker provide an example of how ethnographic procedures can be coupled with the artistic practice of making installation artworks. The paper presents ideas on how to go about using ethnographic techniques and interactive interventions as a means to explore user interactions with technologically embedded spaces. Based on case studies performed or observed by the authors, the main focus of the paper is on the combination of artistic intervention and ethnographic study. They conclude that not only can artistic interventions generate interesting behaviors for ethnographic study but that the results of that study can be used to improve the next iteration of the artwork. Mounajjed et al. thus provide a compelling example of how creative and cultural practices can engage with and be informed by a research perspective used quite widely in disciplines such as HCI.

Katri Halonen's paper is an exploration of the organizational structure and motivation behind membership of the open source artist groups that took part in the PixelACHE 2005 festival. The paper is an analysis of how open source ideology is influencing the work of artists working with digital media, focusing on a set of interviews conducted with participants of the festival. The study presents a comparison between conventional arts practice, open source-influenced practice, and how practitioners fund their work and projects in relation to this. The author proposes the idea that there are a number of stakeholders involved in this kind of artistic community and proceeds to outline how they relate to one another, highlighting the different roles that emerge. Up until now, this area of arts practice has received little academic attention. For this reason this paper is highly relevant to the concerns of this special issue, concentrating on how emerging open source technology models operate within arts practice.

“Untitled”

New cultural forms do not appear fully formed. Their emergence is usually gradual and those who witness the process may not be sure how to talk about it. Peter Bogdanovich refers to over 250 terms for what we now call “movies,” including “actorgraph,” “reeltaux,” and “narrative toned pictures” (Welles & Bogdanovich, 1998, p. 23). Like so many works of contemporary art, this introduction is “untitled.” This is not quite the same as being untitled; an untitled introduction would be called “introduction.” Similarly, a work of art that was actually untitled would not be sited next to a small white piece of card announcing itself as such. In a gallery the “untitled” title makes the claim: This is art. Such claims have been necessary ever since Duchamp exhibited a urinal, in what John Berger (2001) describes as a last and failed attempt to create a work of art that was not immediately and inescapably also a commodity.

As previously noted, digital reproduction presents a radical challenge to the notion of intellectual property and the ownership of new cultural forms. Not only are new cultural artifacts emerging in response to the digital age, so too are new forms of discursive practice: legal, professional, and academic. The “untitled” title here, then, refers not only to emerging types of cultural artifact but also changing practice within research disciplines.

We hope to stimulate discussion by presenting the work described in these papers and so encourage the articulation and appraisal of new forms. The language of practice is, of course, a factor in determining how a form develops and, in turn, provides the means to discuss what these developments mean. In this sense, language is wholly embedded in the culture of creation. Some of the terms that the authors use here, whether machinima or informative art,

may one day seem as strange as “actorgraph.” As new forms emerge, new vocabularies must also develop. We hope that this special issue is a step towards a critical discourse of computing culture, creativity, and technology.

ENDNOTES

1. For information on Leonardo-Net, see www.leonardonet.org
2. Additional information on Roy Harris can be found at <http://www.royharrisonline.com>

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