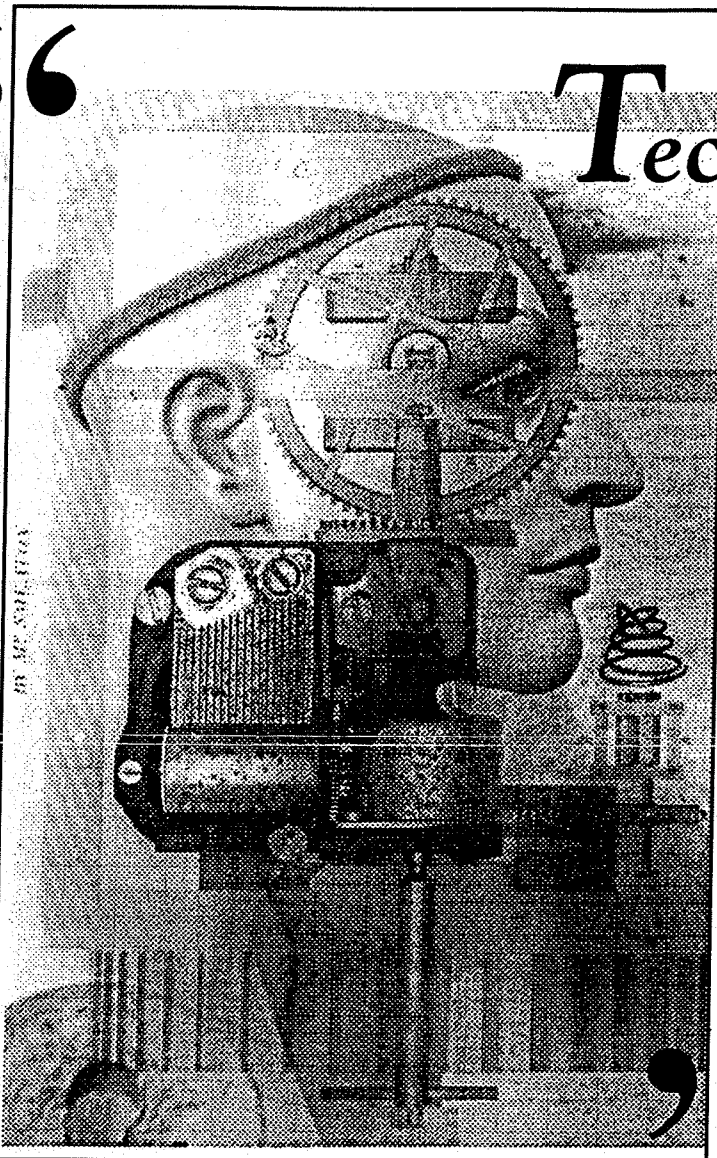


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Artwork by Malcolm Tarlofsky



Technologies of Vision

Friday
November 13, 1992
Stanford University
Oak West Lounge
Tresidder Union

A Graduate Student Conference
Organized by Kerstin Behnke &
Michael Dettelbach

Sponsored by Humanities &
Sciences, History of Science,
French & Italian, and
Comparative Literature

”

PROGRAM

• 9:00 - 10:30 a.m.
CARINE PEELAERS
GERMAN, STANFORD
Technology and Vision in Dada:
Talking Heads and Painting Organs

MICHAEL CAMPBELL
RHETORIC, BERKELEY
Words for Things? Wallace Stevens,
Imagism and Neural Editing in the
Visual Cortex

LOU CATON
ENGLISH, OREGON
High Technology and the Romantic
Imagination: William Gibson Meets
Samuel Coleridge

• 10:35 a.m. - 12:05 p.m.
URSULA HEISE
ENGLISH, STANFORD
Cybervision: Sights/Sites of Time
in Postmodern Fiction

ADRIAN CHAN & JASON LEWIS
The Communicative Interface

MATTHEW CAUSEY
DRAMA, STANFORD
Pataphysical Rerouting: Postmodern
Performance Praxis-Theory (Video)

• 1:30 - 2:40 p.m.
LIVIA TENZER
CLASSICS, STANFORD
The Landscape in Virgil's *Ecloques*
and Roman Wall Painting

JOHN WIELAND
ART, STANFORD
Diagnosing the Difference:
Géricault's Portraits of the Insane

• 2:45 - 3:55 p.m.
RAZ CHEN
HISTORY AND PHILOSOPHY OF SCIENCE
AND IDEAS, TEL AVIV
Light, Vision, and the Organization of
Knowledge in the Medieval University

MICHAEL DETTELBACH
HISTORY OF SCIENCE, CAMBRIDGE
Naturphilosophie: Philosophy
Made Visible

• 4:00 - 5:10 p.m.
PAMELA CHEEK
COMPARATIVE LITERATURE, STANFORD
The Pornograph: The Scene of the
Voyeuristic Woman in Early French
Pornography (1747-1771)

KERSTIN BEHNKE
COMPARATIVE LITERATURE, STANFORD
"The deep truth is imageless":
Representation, Reflexivity, Visibility

• 5:15 - 6:00 p.m.
FINAL DISCUSSION

For information, call:
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Invisibilities at the Interface

Adrian Chan
Stanford Program in Cross-Cultural Exchange

Jason E. Lewis
Institute for Research on Learning

presented at the

Technologies of Vision Symposium
Stanford University
November, 1992

Invisibilities at the Interface

I.

Today's topic is Technologies of Vision, how they operate on us, how they operate on the world, how they effectively and affectively mediate between the worlds internal to mind and the worlds external to it. In this paper, Adrian and I wish to examine a relative newcomer to this age-old process, a newcomer which has managed to colonize a significant amount of the communicative lives of many of those who live in this place called America. This colonizer is the computer, which is making a very healthy run at becoming as ubiquitous of a representational tool as pencil and paper. Like its technological ancestor, the computer has begun to significantly shape our reality, our ties to it and our connections to the others who inhabit it.

The aspect of the computer that interests us, in its relationship to vision and envisioning, is the interface. The human eye projects itself into computer dataspace through this gateway, and it is there, at the point of constructed mediation, that the image becomes information. Like any reliable, intuitive, ready-to-hand technology, the computer seeks to camouflage its presence by constructing a transparency between the human user and the objects he or she wants to manipulate. Like any other complex electronic technology, that transparency depends on interposing some parasitic mechanism between the inner intricacies of operation and the outer, relatively narrow-banded and slow-moving mechanisms of our postmodern though still terribly organic bodies. That mechanism, that generated transparency, that invisibility that determines the shape of the computer worlds we inhabit for seconds, minutes, even days sometimes, is, of course, the interface.

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In essence, the interface is the key to a new kingdom, our eyes onto the increasingly pervasive expanses of cyberspace.

The interface is casually thought of as the plane at which the user's face meets the computer's face; both entities operate and perceive the world at such variances to each other that this 'middle-ground' is required for the two to work together in a productive and comprehensible manner. We do not think in the binary language of the integrated circuit; the computer does not calculate in the multisensorial, affective manner of the human cognitive apparatus. Thus, the interface conducts a two-way interpretive conversation, allowing the user to see into the world of the machine and enabling the machine to see into the world of the user.

This nature of this relationship is complex. In particular, we can break down the dynamics of this interpretive process into two broad categories, both of which bracket out different subsets of the totality of entities present in the human-computer interaction.

We will begin with the least common, though by no means rare, situation, which is when the computer is being used to mediate between two or more individuals engaged in a conversation at the same time. The most common example of this is in the use of electronic mail chat systems, on-line conferences, etc., though tools such as videoconferencing and non-located collaborative work - such as mutual inspection and modification of drawings, blueprints, etc. - fall within this category as well. The critical aim in designing these types of interfacial experiences is to make the entire machine apparatus disappear into invisibility. The dataspace of the machine, and all of the

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functions that it performs in order to enable communication, is purposively bracketed out of the awareness in order to burden users with as little 'cognitive overhead' as possible. In this way, the interface becomes the point at which the user visualizes the others that are 'present' in the interaction without having to worry about what machinations are in process. When such an endeavor is successful, a sense of being collocated is achieved, and the machine's intervention is forgotten by the participants.

The other category contains the vast majority of human-computer interactions, those that take place between an individual user and an individual machine. In this case, the interface acts as the point at which the user can visualize the dataspace, the symbolic toolset inside the machine. Where the interface in the previous category strove to bracket the machine out of awareness, this interface attempts to bracket out of the interaction the presence of any other human, focusing the user on the tool and the job at hand. The goal is to make the computer recede in order to allow the 'pure' data come forward for manipulation.

This invisibility is the goal of all interface design, but it also the conceit of all interface design. Actually, we see it as a double-invisibility. Like most technology, the interface to the computer is radically decontextualized. No attempt is made to bring forward to awareness the decision-makers and decision-processes that were involved in the creation of the artifact the user sees in front of him or her. No attempt is made to present the people whose skills and thoughts inhabit the interface. The 'neutrality' of the machine, the 'neutrality' of data, must be promoted by the interface in its masking of the people 'inside' of it.

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Secondly, designers aim to create a lens that disappears into the background, in order that nothing may obstruct the user from his or her task. And, as these designers are a creative group, they often succeed in creating images that meet our eye in such a way that we see through them, that we are not conscious of this middle-ground even as we move through it. This double-invisibility results in an entity whose ancestry - the story of where it came from, who shaped it, whose purposes it meets - remains well-hidden, not only in a material sense, but socially and politically as well.

The professionals who design interfaces have lived many years by the credo "the friendlier, the better", which more often than not gets translated as "the more unobtrusive, the better". Beginning in the late 60's at SRI with Douglas Englebart's conceptualization of a system to "augment human intelligence", the interface began to be seen as something distinct from though still entirely dependent on machine functionality. Jumping forward a number of years, to Xerox Palo Alto Research Center during the Seventies, the first stabs at creating a graphical user interface - a constellation of icons meant to convert the screen from a medium of text to a medium of images - began, and the term 'metaphor' became the new buzz-word. Finally, in the Eighties, the development of the Apple Lisa and Macintosh computers represented the first large-scale, commercial effort to pattern the user's entire experience of the computer along lines of iconic image.

As the interface took on an identity of its own, those responsible for creating it were influenced by several movements which have only gained real strength in the last decade or so.

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With the continually increasing amount of communication carried across computer-mediated spaces and, thus, transacted through interfaces, the distance between designers' intuitive notions of human interaction and the reality of that frustratingly complex phenomenon widened considerably. As people further and further away from the insulated environment that nurtured computer culture began to make heavy use of such systems, this gap resulted in more and more breakdowns due to software rendered confusing and intractable in its limited fidelity to human interaction characteristics.

At the same time, the quest for artificial intelligence had driven computer scientists to begin examining the body of research generated by the various biological, human and social sciences. Out of this fusion developed the discipline of cognitive science, which became the receptacle for almost anything empirical that spoke to how people were in the world.

Then, sometime in the mid-eighties, the people doing software design began to notice (and were being told, rather frantically) that same body of research had something to say about how interfaces might be designed in order to better handle their human users.

In our present state, designers have begun to move beyond creating effective information storage and retrieval mechanisms, to position the interface as a lens onto whole environments, whole worlds. At heart, they seek to model the human; they seek to model our existence in the world in order to create *other* worlds which we find acceptable and understandable.

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They use cognitive science to build theories of how individuals perceive and process the world; they draw upon anthropology and sociology to build theories of how individuals behave with each other. One prominent designer, Brenda Laurel, has used the term 'interface anthropology' to describe what she sees as necessary approach for creating good interfaces.¹ However, as the two of us have been shaped in the discipline of philosophy, not anthropology, we are more interested in a term used by Terry Winograd, a computer science professor here at Stanford. The term is "ontological design".²

At first it may seem to be an odd appropriation of philosophical jargon to cover the activities of a technical field. However, it is neither odd nor inappropriate; in fact, it is even more of an accurate term than we think Professor Winograd originally meant it to be. He uses it in the sense of designing computer systems and their interfaces to more closely fit with the way people exist in the world; we see in it the implication of attempting to design the worlds in which humans exist, as intervening in the relationship of being-in-the-world from the world end.

Let us delineate, along the lines of their relation to organically-generated reality, the worlds we see as being designed. The first are the local spaces generated by a single computer. Among the many interesting phenomena that crop up in looking at computer-human interaction is that people see the computer as populated by agents and demons, as having a varied landscape inside of it. This is not to argue that they believe in

¹ Laurel, Brenda in The Art of Human-Computer Interface Design, Brenda Laurel, ed., Menlo Park, Addison-Wesley, : 1990. p. 93

² Winograd, Terry, and Fernando Flores, Understanding Computers and Cognition, Menlo Park, Addison-Wesley : 1986. p. 163

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the sheer existence of such 'things', but that it provides a persuasive cognitive shorthand that lessens the complexity and impenetrability of the machine. These local spaces complement 'organic' reality.

The second are the translocal spaces which are taken to fine-detailed extremes in William Gibson's *Neuromancer* books.³ Electronic mail networks, on-line interactive conferences and the like are the first settlements in this brave new world. Much of the planet's money-flow occurs in cyberspace, where objects do not exist in any other manner than as instantiations of the binary code. It is a place where real things happen without happening to real things, creating a world that runs in parallel to 'organic' reality.

The third are the multi-sensate, translocal spaces of virtual reality. Here, the user no longer observes the play of images on a screen, but interacts with an alternative reality. Here, the interface achieves ultimate transparency, as Scott Fisher, a virtual world-maker, notes: "The possibilities of virtual realities, it appears, are as limitless as the possibilities of reality. They can provide a human interface that disappears—a doorway to other worlds."⁴ These other worlds, in their illusion of completeness, will be much more powerful than the parallel worlds of cyberspace, and make promise of being able to supplant 'organic' reality.

Back to interface explicitly. There are many skirmishes going on around how these new realities get realized - discussions about whether machines could and should be

³ Gibson, William, *Neuromancer*, New York, Ace Books : 1984; *Count Zero*, New York, Ace Books : 1987; *Mona Lisa Overdrive*, New York, Bantam Books : 1989

⁴ Fisher, Scott, in *The Art of Human-Computer Interface Design*, Brenda Laurel, ed., Menlo Park, Addison-Wesley : 1990. p. 438

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intelligent, about access, about who determines how the network evolves, etc. - but the interface is still seen primarily as neutral ground, which may or may not look good or may or may not be fun to interact with. The interface, however, should be a battleground, for, as Brenda Laurel points out, it "reflects the physical properties of the interactors, the functions to be performed, and the balance of power and control."⁵ It will form our experience of these realities, and determine how they effect our existence in 'real' reality. As computers grow more present, and their designers grow more powerful in the shaping of our worlds, we need to conceptualize the sight the interface allows as more than an issue of design, but as an ontological issue. Already it is being constructed as a sociopsychological issue—Clifford Nass, a professor here at the Stanford School of Communication, has run studies showing how people treat computers in a ways that are significantly similar to the way they (people, that is) treat one another, i.e., computers are seen as social actors with similar legitimacy and believability conditions.⁶ Donna Haraway has written "[i]t is not clear who makes and who is made in the relation between human and machine";⁷ if so, than the interface, which mediates that relationship, needs to be subject to intense theoretical and practical investigation.

Allow us to briefly suggest a beginning point for just such an investigation. We will begin this begin with a quote from Susan Leigh Star, a sociologist, and what we would call an 'ecologist' of science. In her essay, "Power, technology and the phenomenology

⁵ Laurel, Brenda, p. 92

⁶ Professor Nass runs the Computer as Social Actor Project at Stanford University. See Nass, Clifford, Jonathan Steuer, Lisa Henrikson, and D. Christopher Dryer, "Machines and Social Attributions: Performance Assessments of Computers Subsequent to 'Self-' and 'Other-' Evaluations" and Nass, Clifford and Jonathan Steuer, "Computer as Social Actor: Voice as Mirror of the Soul". Both papers submitted for publication.

⁷ Haraway, Donna J., Simians, Cyborgs and Women: The Reinvention of Nature, Routledge, New York : 1991, p. 180

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of conventions”, she writes: “Power is about whose metaphor brings worlds together, and holds them there.”⁸ The preceding discussion about the interface was an attempt to explicate how the interface, the matrix of iconic metaphors designers use to bring together the human world and the world of the machine, represents the empowerment of a small group of individuals to determine the cyberspatial landscapes while remaining quite invisible.

In work previous to the one cited above, Star, in her studies with James A. Greisner of power networks in institutional ecologies, speaks about ‘boundary objects’, an

“analytical concept of those...objects which both inhabit several intersecting worlds...and satisfy the informational requirements of each of them. Boundary objects are objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites.”⁹

In other words, boundary objects serve to align the different communicational gestalts, the differing ways of talking about being and seeing, that belong to different communities. If we see the interface as an enormously flexible and variably configured boundary object, we can begin to examine the border zones which it occupies in terms of how the compromises between “local needs’ and translocal communication requirements

⁸ Star, Susan Leigh, “Power, technology and phenomenology of conventions: on being allergic to onions,” (pending publication), p. 53 of manuscript.

⁹ Star, Susan Leigh, and James R. Griesmer, “Institutional Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907 - 1939.” in *Social Studies of Science*, vol. 19 (1989), 387 - 420. p. 393.

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are being made there. This will provide a framework within which to fix the interface and draw it out of its invisibilities, uncovering the people who inhabit it in terms of how they see themselves as mediating between the user and the worlds inside the machine.

Seen as a boundary object, it can be reconstructed from being a mere passage point to being a translation point, where the realities of the multiple human worlds get translated to and from the realities of multiple machine worlds. This is an attempt, to paraphrase Donna Haraway, to destabilize the clean boundaries normally drawn between the human and the computer, and to take responsibility in their re-construction.¹⁰ As a boundary object sitting between us and others, between us and the machine, between us and the world, filled with metaphors that seek to remain determinate and powerful regardless of which community they are speaking to at any one time, it actively assist in the shaping of our sight. As computer systems and interface designers draw increasing amounts of inspiration from the human science, we in turn must assist in the interpretation that is taking place in that moment of appropriation, in those moments when the interface destabilizes out of its transparency and is present for reconstruction.

¹⁰ Haraway, Donna J., p. 150

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II.

Technologies increasingly populate our world, and we spend ever greater amounts of time in a relationship to the world and to others that is technologically mediated. As a medium or media, technology imposes its own structure on both the world and on the subject. Technologies of old were limited in their capabilities, stable, being made perhaps out of metal and having a limited number of moving parts. With computers—technologies of the interface—technological objects become unstable. The screen can transform the computer from a workstation into a game and then back into a writing pad. The computer can change its own identity by changing its function. Fueled by electricity, it draws on the capacity of the screen and the elasticity of electricity itself to destabilize. Unlike these technologies they can also bring us into contact with other worlds—as Jason noted. Worlds inhabited by others, such as on electronic bulletin boards and in electronic mail, worlds strangely uncanny (virtual reality), worlds such as writing that already seem quite familiar to us. What interests us, and what we will try to explore in the next few minutes, is what impact this might have on the subject and on society. Do our relations to boundary objects such as computers implicate us? Do we begin to share some of the instability, the nomadism, that characterizes these technologies?

The history of technologies can be told in terms of the history of the human subject's extensions. Each new technology has in some way or another enabled the human subject to expand his or her influence on the world around him or her. In some cases this has had a significant impact on the subject's *relationship* to the world also. Insofar as these

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technologies mediate the subject's experience of the world, they alter her constitution as subject. And by mediating reality, they alter its significance, its meaning.

Technologies of *vision* were and are those that improve vision and those that record vision. When we say that they have improved vision we mean they have improved sight. It is arguable that the television, for example, has eroded the imagination. (It is perhaps also arguable that computer screens damage one's sight.) We mean by the first category just those technologies that normally allow the human subject to perceive more, or differently, than he would in a normal state. The second—recording technologies—are those that make a semi or fully permanent recording of something seen. Not of a scene envisioned or perceived in the mind, but of a scene viewed by the camera lens and recorded on the flawed but sometimes adequate medium—be it digital or analog, memory or emulsion.

Other technologies, such as the telephone, the gramophone, the microphone, and yes, the book, have followed similar paths. Each has in its own way made it possible for the subject to extend and sometimes record her relation to the world, and in the cases of communications technologies, to other subjects.

If we begin with the point of view represented by McLuhan that technologies are extensions of the self—and we're leaving out the Foucauldian perspectives on this, which would identify techniques, of domination for example, as technologies—we might ask the following questions:

1. Does the extension simply extend a human action?
2. Does the extension amplify or reduce a human action?

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3. Does the extension mask a human action?
4. Does the extension substitute or replace a human action?

We like these questions in part because they follow the same progression that is mapped by Baudrillard in his theory of the image and the simulacrum: correspondence, distortion, masking, and substitution. The farther we get from the center—from the subject—the less stable human actions become—the more prone they are to the influences of the technologies they came into contact with—the less sovereign they are. In fact you can turn the four statements around so that you are reading: Does the human extend a machine's action; does a human amplify or reduce a machine's action; mask or substitute, etc.?

We think this reversibility points to a reciprocity between the human subject and the machine, and that is why we are interested in the ramifications technologies have for society. It is just as easy to view subjects as extensions of technologies as it is to view technologies as extensions of subjects. The question is whether or not the worlds created by technologies threaten or merely augment "organic reality," and whether or not the subject is expanding or disappearing when she enters mediated or artificial worlds. What McLuhan described positively as the nervous system we wear on the outside of our body, the brain on the outside of our skull, Baudrillard would have considered obscene.

At the point at which each technology meets the subject we have an interface. In the case of the telephone it is the handpiece. In the record, tape, CD, DAT or whatever player, the speaker. In the television and computer, the screen. The interface,

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put simply, is that part of the technology that mediates between the subject and the world, between the subject and another subject, or between the subject and the machine.

The first interfaces were machinic. Instruments were the interfaces by which an audience heard the translations of a composer's musical notation; translations that created music.

Just as the harpsichord or the drum is an interface, so too are pen and paper. There is something intrinsically stable about these examples; the material itself may age but won't change fundamentally. It wasn't until amplification that someone like Jimi Hendrix was able to radically redefine the function of the guitar.

Electricity and electrification fundamentally changed the nature of interfaces, for electricity made their non-identity feasible. In the history of modes of communication, for example, no message was delivered faster than the quickest mode of transportation—until electricity deemed the *physical* movement of a message unnecessary. In communication, electrification collapsed space and time.

The electronic book—the electronic interface for text—is only now coming into use. To give you an example of a text that destabilizes itself, William Gibson's latest book came out in electronic book form and can be read only once. Each page eats itself after it's been read. Nor can the book be printed out or copied. But this is an extreme example of a rather uninteractive electronic text.

The visible world of the interface appears and disappears, leaving traces of its temporal existence. Glimmers. As it shimmers before us we anticipate what will come into view next. And so the fleeting world of images becomes the world that is the case. The

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simulacrum too. A book as simulacrum? For the electronic interface, as described earlier in section I, can handle virtually any world that its designers give it. It can become anything that is within technological possibility. It is a representational structure whose surface is not limited to its materiality.

How treacherous is a surface whose codes, whose commands, whose limitations and whose structure are invisible, hidden within the machine that presents us only with its indeterminate face? Should we be suspicious of the modern-day spirits, the ghosts that are the machines? Or why be suspicious at all? We have wondered sometimes whether or not computers ought to be counted among the world's population. We think there ought to be some way to account for and measure the relationships humans form with these screens, and insofar as they have their place in society, why not count them among the population? Why? Because these screens are like agents. They act, take part in actions, extend actions or command actions. . . they are agents without intentions. Bodies without intentions.

It's here that we think the technology of vision—the interface we are referring to—is more than just an object, more than just another tool. We like to think of it as an acting object (We don't feel comfortable calling it a subject). The interface causes changes in its world. It performs. It presents a visual and/or textual world whose horizons grow or contract, shift and dissimulate. Its worlds are characterized less by narrative than by interruption and discontinuity; juxtaposition and collage.

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The interface is all the while structuring the user's vision. During this communion of user and machine the user, more often than not, is in the machine's world, bound by the machine's communicative rules and the machine's visual space. If speech act theory is used to analyze the actions performed while speaking, why not argue for an image act theory that would describe those functions or actions performed during the appearance of an image? The image is viewed and received by the subject. The subject responds to the image in some fashion or another. The image changes; it moves, disappears, reappears in a different form, and the user responds (thinking all the while that he's in control). (An image act theory might look for illocutionary and perlocutionary effects in the user's relationship to the interface.)

But while the interface structures vision, it draws the user into relation with its world. The interface, being in the middle, between machine and **subject**, mediates the meaning imparted across it and permits the subject to take part in the production of meaning. Meaning is co-produced with the subject. The communicative subject *interacts* with the image/text appearing on the interface. The subject is not dead; nor is she absent. She's on the move, traversing mediated communicative spaces, looking out into worlds that in their instability force her to relinquish expectations of continuity. This is what we consider nomadic behavior: only that the nomad, rather than choose to wander through unmarked territories, is forced to move in order to compensate for the shifting transitions from world to world. The movement is undertaken not by the body but by the brain. Let's look at hypertext for a first example. With hypertext a book read on the computer allows itself to be altered by the reader. By clicking on words and icons the reader accesses texts and annotations not visible in the text at first glance. For example, a

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footnote or an annotation might lead the reader to other references, bibliographic information about other authors, critical comments made by other readers, etc. The text read by the reader is not stable; it is up to the reader to create the text. Future hypertext versions will make it possible for the reader to significantly alter the text. We are reminded of Burroughs' cut up methods. In short, the reader is a writerly reader. The "ontological design" of the interface has allowed the reader to enter into an entirely new relationship to the text. The sacred word broken, it can be marked, moved, erased, or rewritten—by the reader. The composition of the text, not just the set of interpretations brought to it by different readers, is so destabilized that it itself might be considered a boundary object. And the reader participates in the meaning produced by the text by in effect co-writing it.

For another and very different example, let's go to e-mail. Electronic mail is correspondence that appears on the computer screen. It brings people into communication over the telephone lines, permitting them to write instead of speak (though the voice will probably replace the hands as our means of communicating with computers in the not-so-distant future, just as notebook computers may cause the writing hand to replace the typing hand). The text appears to the correspondent, and the body of its author can only be supposed. Gender and ethnicity fall away. We write in complete anonymity, choosing handles and other devices to disguise ourselves. Like the phone, this challenges rules of communication insofar as the physical absence of the other subject does not obstruct communication. Furthermore, the interface itself creates its own communicative rules. Messages become shorter, for example, because it is poor etiquette to send anything that can't be read quickly and that does not appear all at once on the

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screen. If you have ever used a real time electronic conference, in which you "talk" to other users by typing at a networked terminal, you will recognize what we mean here. Statements made by others logged on at the same time appear directly on the screen next to the user's given handle, or name. These conversations read like a series of rude interruptions, each person usually responding to the *last* comment to appear on the screen. The turn-taking rules that govern normal conversation disappear completely. Only rarely does someone refer back to something you have said and reply directly to it. Hypertext and electronic mail, both still in their embryonic form, are only two examples of the ways in which computers are destabilizing image, text, and human communication. We could add virtual reality and multimedia, but there's not the time.

Let us instead conclude by summing up the brief points we have attempted to make here. Technologies structure our physical and perceptual relationships to the world, and in some cases to others. They refract the light of existence; showing only what they are able to bring to light. They form and they inform. Now, the interface through which the subject falls into relation with the machine may be more or less receptive to the subject and more or less determining (in respect to the world it presents). But we think that as long as meaning arises out of the lifeworld, out of human interaction, it cannot be generated by the machine. Nevertheless, we have effects produced by computers perceived by the human subject, such as those feelings of intimacy or frustration we often have for our Macs, that are accidental and are effects of the unintentional agent. To us it comes down to the issue of relation: that is where we think the subject and the machine have everything at stake. It is possible that we will enter a time in which technologies

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threaten this relation radically enough to seriously challenge the distinction between the two.

Technologies inform, and we do interact with them. If the interface is a strange and unstable border zone, inhabited in part by the nomadic user and in part by the boundary object, there is reason to think that such technologies will indeed impact society. Perhaps they will take part in defining the margins and periphery of our reality. Perhaps they will absorb the place once occupied by the magical and the sacred. Perhaps they will create ever-expanding communicative spaces for those who dare not meet in person. Perhaps they will bring us images more seductive and more colorful than those available in our deteriorating environment. But the destabilization of image and text on the computer interface and the destabilization of social relations mediated by computer interfaces offer creative possibilities. Nomadic subjects and unintended agents may in fact discover that their new and unstable worlds thwart all attempts at colonization and codification. We will have the opportunity to engage in entirely new realities, to extend our connections with people, events, and information never before accessible. The interface may provide us a gleeful electric sandbox indeed.

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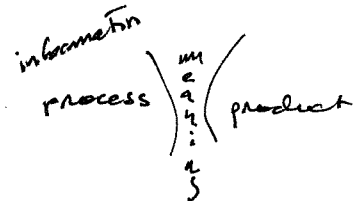
as it turns out, iUm indeed able to get e-mail from over here. I will be back from the 11th to the 15th, and then on the 26th until oct. 1.

i was thinking that we might begin the paper by talking about the emergence of electronic books as a means of justifying why anyone should be at all interested in the topic. That the medium through which we will read, if thatUs what we should continue calling it, is about to change (and has in fact in the case of business communications, autotellers, etc.)

*new academic medium
à la Derrida*

We will also need to run through basic arguments that the medium is the message. that way people understand that thereUs a point to being interested in the medium.

We might cover some of the arguments concerning information vs. meaning. perhaps we could think about information as text. or for that matter, what is information? perhaps this would get us into the purpose of information and text. reading as leisure/pleasure, reading as argumentation and discourse, reading as legitimation (eg law, political documents --emancipation proclamation and other important events that were executed through writing). then information as information, as performance (getting money out of a machine), as work (conducting business), as efficiency (supporting bureaucratic systems), etc. Icons } would follow quite easily from the argument that as the medium for text changes so too does the entire habit of reading.



one thing (iUm rambling a bit now) that interests me about interfaces is that they make a gross assumption about reading (the act of). this assumption is that the style should be transparent, that is, invisible. This is interesting insofar as all technologies of today aspire to be transparent and invisible. that makes them ideological in nature.)))

Technology works as a cultural force today in part because we no longer question its purpose and raison d'Uetre. We simply don't think about it a whole lot. it simply works. But thatUs not necessarily the point in all cases of reading. Is

- more -

From: Adrian P. Chan (9/3/92)

To: Jason Lewis

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reading as leisure disappearing? Is the interface through which information is communicated taking over the form itself? Analogous, perhaps, to sculptures that do nothing but communicate information (content) without having any form. (Is this television? I think it is!) We could coin the term TtelevisualU: any medium that subordinates all form to content, any medium in which the interface is completely transparent. (As I look at lcd screen under the sun without any background lighting, I see only a mass of floating lines and curves. I see only words. I do not have to derive their meaning from the medium. there is no context, as there is in speech@gestures, intonation, expressiveness@the words are there, pure and whole). *but do not words lend me another context*

any medium based on (1 to many) consumption with no interactive component

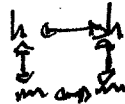
The Interface

IUm getting more organized now. About the interface, as I look back on the proposal, we have defined it very broadly. We have suggested that one might study interfaces as media (in McLuhanUs sense). Books, screens, stone tablets@all of these are interfaces. So our paper is arguing that intellectuals should monitor and give careful thought to the progress of the interface(s). Interface design affects the content. This seems quite simple to me. ItUs like saying that doctors should all be interested in artificial prostheses insofar as the advances in the prostheses themselves affect the mobility and capabilities of their users. And like interfaces, like all technologies, prostheses like to be invisible. Eyes, legs, ears, that look and function as normal ones, all the while redefining the very meaning of functionality (because what happens when the artificial ones are better? what happens when AI is better than the mind? When Technology has indeed surpassed everything we needed from God?)

The interface is where all the decisions about what humans are and how they act are made.

extension not just of the body, but of a 'normally' f(G) bodies capabilities

Perception



The Communicative Event

Labour. "The Machines are restless Tompkins"

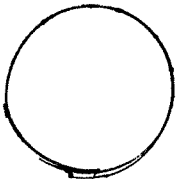
I think this is interesting because *(we suggest that)* communication is more than intersubjective. And also because many of us (wrongly) think that technology has some kind of intentionality. (In fact, this is the glaring poverty of PostmanUs arguments. He imbues technology as a force of change, without explaining how this could possibly be. That societies make change, and that they do it through the tools and means at their disposal, is something he overlooks. His arguments are persuasive because he gives us reason to feel like the victims of technological advances we think we are. As perhaps Oppenheimer did.)

more complex and tightly coupled than that... tech isn't intentionally situated, but it does open up new ground... enables intentionality that might otherwise have been frustrated. Has agency but not intentionality?

So what is communication as interface if it is more than communication between people? We need to argue this in order to come up with the image-act theory we have suggested. All media communicate. All media, as forms that contain substance and content, as forms that have given the content a substance through their particular form. To

between people and tech spaces / machines - more -

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argue this IUm going to read up on FoucaultUs arguments about representation and DeleuzeUs about form and content. The form of the religious icon reshaped the Christian church. It was then believed that icons represented divinity and divine purpose. Later it was understood that these were representations with their own characteristics and qualities. Wine was not blood, it was wine that represented blood. The church was not the only institution inhabited by God (whatever happened to nature, our Garden of Eden?); the church was a place in which religious service brought one closer to God, and authoritatively so. So it was then later possible to justify the establishment of new churches (religious groups) and to justify the value of individual prayer (and individual interpretation of GodUs word).

But there were people in the churches, and particularly, there were authoritative people. These men were robed, they were formal, they were orators. They, for many years, spoke only in Latin (meaning that many 20th century believers could not judge the practices of the Roman Catholic church for themselves). What people inhabit our invisible technologies? What people are there to speak the technology? The technologies communicate by themselves.

For a long time they did so through text. Nineteenth century advertising was simple and rational. A product was worth having and it was possible to show this through rational discourse. As advertising competition grew during the early 20th century, it became clear that rational discourse was unnecessary. Fonts, images, and other stylistic expressions overcame the messages of advertising until we recently reached the point at which the message was elusive, and the company and product only suggested (look at Benetton).

These later communicative events drew (and continue to) more heavily on an expanding lexicon of indirect discourse. They referred increasingly to cultural metaphors, analogies, and implications. That is, they became increasingly self-referential. Marketing has become a discourse entirely to itself. Ads refer to other products, to other images and events suggested therein. Values no longer (or not yet, as the case so often may be in the TThird World,U where rickshaw drivers are implored to drink coke as if others who see them doing so will want to be just like them) contemporary are kept alive in the floating empire of marketed signs and symbols. America is still Number One. Democracy reigns supreme. Children love to talk to their ageing grandparents by phone. Ageing grandparents have thousands of stories to tell their grandchildren. Families work.

The communicative event, then, involves (how, we cannot say) subjects in an(indirect) discourse. This discourse has become increasingly self-referential. It has also become increasingly(visual), and relies upon greater technological advances than in the past. (Consider the widespread use of special effects and now of computer animation. You wonUt find computer, animated detergent ads in Spain, though I

- more -

perfect phrasing. We may not go so far as to see an machine as autonomous Capant from some superficial anthropomorphisms) but we don't see the people "inside" them. ~~It's~~ to that they are capable of semi-autonomous or at least emergent actions.

→ I still have difficulty with this, and with the simulation. It has to start somewhere...

→ what's indirect about phones?

→ need to nail down visual - we read in sight...

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assume thatUs on its way.) The medium, then, is more central to the communication of these messages than it was in the past. (iUm not sure about this argument. does Tmore sophisticatedU necessarily mean more central?) This is the crux of the matter: as media spreads, it disappears. That is, it dis-appears. ItUs increasing level of visibility corresponds to a decreasing level of intensity. When a cancer first attacks a body the body resists and is still larger than the cancer. At death, cancer has redefined the body. The body has become cancerous. The bodyUs new nature is the cancer itself.

no, but the more resources being devoted in 2 directions means that others are being neglected
→ if of capacity & intensity so great interaction occurs - it becomes the background

Where it gets fuzzy, and this is where iUm going to have to think hard, is where we go from there. I donUt have a grand theory yet for how we might describe what interfacial communication is about. But I think we can describe how future students ought to investigate it. Deleuze will be important to us as we think through the nature of meaning and communication. IUll do some thinking while IUm in Morocco. In the meantime you might check out some Deleuze (eg in Thousand Plateaus, Chapters 3 and 4 on Linguistics and Signs: the arguments about subsistent meaning, about form and content, forces, statements, visibilities, etc.) At the same time IUd like for this part of our argument to show that communication theory, perhaps in the vein of Habermas, can be of value too.

Your part

I think it would be fun to say a little about the metaphors we are using. Intentional metaphors are pretty popular; some might say that this corresponds to an Tagentic shiftU by which technologies really are doing. Your suggestion concerning three-dimensionality and the subordination of the human subject to netspace should be provocative. Does this mean that meaning is generated in netspace and that we humans understand it (from now on) only in the terms established by the net?

Concluding Statements

I like the suggestion that interfaces will function as future battlegrounds for the production of meaning and for humanityUs relationship to machines. I do not think that the conflicts will be political in nature; rather I think that they will be programmatic, mechanical, technical. In this sense I suppose a study of HitlerUs holocaust machine ought to be studied at the level of propaganda and communications media rather than at the level of cabinet meetings and other traditional modes of high-level politicking. The audience should at least get a kick out of the notion that interfaces are where itUs all happening.

not exactly... difference between ~~unintentional~~ "intentionality" and human intentionality

ItUs late now and weUre off to Morocco tomorrow. I will be able to get e-mail at about 12:00 my time, which is about 4 am Friday morning your time. But this should at least give us a starting point for where to go from here. One of my hopes is that we can come up with a useful suggestion along

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the lines of image act theory or something catchy like that. . .
I haven't said too much about images yet, but I'll work on it
while I read Foucault's book (Order of Things).

Ciao, Adrian

I haven't said too much about images yet, but I'll work on it
while I read Foucault's book (Order of Things)

The Communicative Interface

Part I Adrian Chan

It might seem strange to suggest that we need new ways of "reading" the image, were it not for the close relationship between "statements" and "visibilities" (i.e. Foucault: *This is not a Pipe*). The theoretical approaches of this paper will examine a number of issues we think are concerned with the "reading" of the image in the age of its technological manifestation. The paper would address the points below, not necessarily in the given order, and not without substantial revision.

Thought Experiments

1. We have seen interpretive discourses travel from the image-as-representation to the image-as-sign. In Baudrillard's language, the image has dropped out completely, superseded by the simulacrum.
The image occupies communicative space. As a medium it is not simply denotative, connotative, or signifiatory; to paraphrase Deleuze, it is, it communicates, sense → as in 'sense'?
3. As communicative in nature, we might suppose the possibility of applying an "imaging act" theory (drawing from speech act theory). We ought to raise questions concerning the social context behind the communication of the image.
4. Action theory suggests intentionality. "Imaging act" theory might address the idea of intentionality and raise questions with regard to the image's production of meaning.
5. At the level of the generation of meaning we encounter the reflection of the image to its informative "content" (*Content of the Form*). This returns us to the first point, and Baudrillard's comments on the digital, genetic, and code. *how is this a return?*

All of the above thought experiments might be perfectly adequate if it were not for (at least one) additional intervention: the problem of technology. As both parts of this paper address the relationship between technology and the image, and thus seeing, we need to proceed with some further experiments.

6. The content of the image is its entertainment value, say some. Others see no value in that at all.
7. Entertainment gets us nowhere. The image is contingent upon its medium, and the function of the image in society/(mass culture?) at large is irrelevant.
8. In question is the medium that makes it possible to consider the image as a communicative, shall we say, event. In the technological age, the image occurs at the interface of technology/medium and human/perception. Away with Bergson. *why?*
9. The interface is perhaps Foucault's "middle," Blanchot's space, Serres' equilibrium. ... The interface is perhaps where we find the current battle over the image: computer-human interaction, virtual reality, the screen.
10. The interface is the interactive visual/linguistic locus of sense—its production, interpretation, and communication.

Technology is by and large a force in absentia. It is, like the subject of all good structuralism, the exterior, outside, absent, invisible. Indeed, this is what makes it so user friendly. What is at stake from here on out, however, is nothing to be blind about.

Part II Jason Lewis

The human eye projects itself into computer dataspace via the human-computer interface, and it is there, at the point of constructed mediation, that the image becomes information. The professionals whose daily job it is to shape the data through their fashioning of these images live by the credo "the friendlier the better". Their task lies in making technology invisible, sliding the available data down to a size that can be easily communicated in an image-bite, protecting the human eye from 'information overload'. The choices of what the image will allow and what it will deny — what is sense and non-sense in the plane of the interface — are driven largely by available technology and aesthetics. By doing a short tracing of the history of HCI and then looking at the convergence of three fields which feed that project — interface agency, artificial intelligence and virtual reality — we hope to focus on those critical points at which the technology disappears behind the image, and ask: where does it go?

In providing a brief history of HCI, we will begin at the Stanford Research Institute with Douglas Englebart's vision of augmenting human intelligence via a usable window onto the world of computer data and its manipulation. We then jump forward a number of years to Xerox PARC during the Seventies, where the first stabs at creating a graphical user interface, a constellation of icons meant to convert the screen from a medium of text to a medium of images, were carried out, and the term 'metaphor' became the new buzz-word. Finally, we move to Apple's Lisa/Macintosh computers, the first full-scale effort to pattern the user's entire experience of the computer along lines of iconic image.

This short history sets the stage for a discussion of 'interface agency', one of the latest movements in HCI, and, in the authors' opinion, one of the most important. Interface agency, as formulated by Abbe Don, Brenda Laurel and others, pushes at HCI's traditional use of metaphorical images to denote particular functionality in order to present the user with an 'agent', subject to command and accountable in its actions. The icon no longer represents a key [means of getting to], say, to a word processing program or spreadsheet; it represents a semi-autonomous data creature, which scurries out into cyberspace on missions of various sorts. But this movement represents more than additional functionality or ease-of-use; it problematizes the role of the computer and the code embedded in it by transforming the iconic image from a window onto data into an anthropomorphic image seductive in its mimicry of human agency and delusional in its facade of slave-like controlability.

In the last part of this section, we will discuss how the combination of artificial intelligence with virtual reality creates the ultimate narcissistic world. Virtual reality unfolds the image out of the flatland of two-dimensional, visual space into a three-dimensional, sensuous space. It is no longer just the eye that's projected into the data, but the entire body. The stakes of interaction with the space of the interface have changed; they are perhaps no longer benign. We might conjecture that technology as technology is completely replaced by an alternate, pseudo-physical reality dedicated to feeding the user the information (and stimulation) she desires—to the point that the images she encounters exist solely for the sake of their informative content. If this is indeed the case, we are forced to treat the in-forming of the body, eye, and nervous system anew. What is the relationship between seduction and information, between meaning and information? What becomes out of the interaction of agent and interface (virtual reality)? It seems that the human's ontological status is problematic as she becomes just one of a population of three-dimensional, semi-autonomous images. Perhaps the

question should not be phrased in terms of the agent's sovereignty. . . We might do better to suggest a symbiosis—the technology of vision as the technology of existence?

