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BEHIND THE BLIP
ESSAYS ON THE
CULTURE OF SOFTWARE

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~~retranslating it into an ordered list. The Web Stalker does not assign importance or greater degree of relevance to sites, merely relaying the greater number of links to them by increasing luminosity of the node. Clever is far more sophisticated in terms of its mapping, however, simply by the analytical tools it is able to bring to bear on the information.~~

~~34. <http://www.almaden.ibm.com/cs/k53/clever.html>~~

~~35. "Hypersearching the Web: The Clever Project," *Scientific American*, June 1999. See also <http://www.sciam.com/1999/0699issue/0699raghavan.html>.~~

~~36. J. Kleinberg, "Authoritative Sources in a Hyperlinked Environment," *Proceedings of the ACM SIAM Symposium on Discrete Algorithms*, 1998.~~

~~37. Haraway, op. cit., p. 198.~~

~~38. Patrick J. Lynch and Sarah Horton, "Imprudent Linking Leaves a Tangled Web," *Computer*, July 1997, Vol. 30, No. 7, pp. 115-117.~~

~~39. Steven Johnson, *Interface Culture: How New Technology Transforms the Way We Create and Communicate* (San Francisco: HarperEdge, 1997), p. 110.~~

~~40. See the work of Critical Art Ensemble (<http://www.mongrelx.org/Project/Natural/Biotech/>), or Stewart Home and Daniel Vaughn (<http://www.mongrelx.org/Project/Natural/Skewed/>).~~

~~41. See, for instance, <http://www.mongrelx.org/Project/Natural/NSA/> or <http://www.mongrelx.org/Project/Natural/Agent/>.~~

~~42. Sigmund Freud, "Remembering, Repeating and Working Through," *The Complete Psychological Works of Sigmund Freud*, ed. James Strachey, vol. 11, p. 155.~~

~~43. Weizenbaum, op. cit.~~

~~44. John McCarthy, cited in Weizenbaum, *Computer Power and Human Reason: From Judgement to Calculation* (London: Pelican, 1984), p. 203.~~

~~45. Isabelle Stengers, "Black Boxes, or Psychoanalysis a Science?" in *Power and Invention: Situating Science* (Minneapolis: University of Minnesota Press, 1997).~~

~~46. Weizenbaum, op. cit., p. 191.~~

THE IMPOSSIBILITY OF INTERFACE

The graphic user interface, it is said, allowed computational power to leap from relatively isolated positions—for example, from expertly attended payroll-management machines used in the cores of banks—into new forms of relation with people and other processes. It thereby established a direct and hence ever-so-useful involvement with every part of life.

What are the terms of this interrelation, and what do software interfaces have in common with other forms of interface? A working definition is provided by Brenda Laurel. "An interface is a contact surface. It reflects the physical properties of the interactors, the functions to be performed, and the balance of power and control."¹

Using this definition to help develop the above questions, I want to run a consideration of interface through a speculative typology of modes of interface which goes as follows:

~ Interface as distributed throughout and indivisible from the system it is part of.

~ Interface as monitoring and control of a reductive, indexical map of separate elements that can be changed from state to state, but not altered.

~ Interface as an associational structure that allows a user to manipulate, alter, destroy, and multiply processes and objects from which it is independent.

SOFTWARE: INFORMATION AND MATTER

What I am suggesting here is not simply a ladder of abstraction, but more a recognition of processes becoming internal to the computer. This is an extension of what Katherine Hayles suggests when she names virtuality as “the cultural perception that material objects are interpenetrated by information patterns.”²

We must note that the recognition and interpretation of such patterns is itself the performance of a device—‘information’—that has certain effects, tending towards the manufacture of a caesura between matter and information. This is always only the effects of an interpretative operation on matter, rather than something ‘given freely.’ Matter is understood to be always informational, but never pure. If matter is never simply informational we must also flip the pairing. If we are to understand informational patterns as always having a materiality, then the interpenetration of informational patterns by other informational patterns is what is discussed here as software. Such informational patterns are always understood to be embedded and manifested in materiality—the architecture of a computer, for instance.

METAPHOR

First we need to briefly touch upon metaphor. The assumption here is that metaphors will be gradually erased from mass-use interfaces.³ Metaphors, it is typically explained, are useful in generating a way for users to imaginably map out in advance what functional capacity a device has by reference to a pre-existing apparatus.⁴ However, as functionality outstrips the explanatory capacity of reference to previous media forms, this initial usefulness will diminish. The uneven spread of metaphor-reliant constructs within most applications would tend to support this thesis. Software will need to be seen to do what it does, not do what something else does.

At the same time, as in the case of animation or multimedia applications using the model of a “set,” with “lighting,” or the “darkroom” metaphor of Photoshop, they do remain as imaginal regimes structuring particular kinds of software.

Two uses of the magnifying glass as metaphor are interesting in this respect. In the Mac OS’s Sherlock, a search tool, clicking on a button with a picture of a magnifying glass actuates a search for a string of characters typed into an adjacent field. In programs like Photoshop or Quark XPress, the magnifying glass works to perform a jump-cut which magnifies or demagnifies a selected element of the “canvas” or “page” (via either a marquee or simple click whose degree of magnification or demagnification may be set in advance via a tool settings dialogue window).

In the case of Sherlock,⁵ on the other hand, the result of clicking on the magnifying glass is a list of files in which the requested string occurs. Instead of a mimicking of the capacity of sight, or of the action of lenses, what emerges is a database form: the index. (Such an asymmetry between metaphor and function is incidentally illustrative of the medial incompatibility that faces the construction of image databases.) Perhaps the designers of the interface mistook what they must have taken to be the cuteness of the name of the device for its actual function, or were channelled into keeping a metaphor ticking long after its initial imaginal power had been shed. Perhaps a “realistic” image of a syringe or a violin, Sherlock Holmes’s actual technics of associationality, were beyond them?

What this suggests is that it is those elements within the wider field of software that are working to the strictures of the version economy—in which a release is demanded every six to twelve months—that are going to maintain metaphor, or have any need to do so. Such a repetition is necessary in order to keep the mass scale of users, by means of an apparent familiarity, on the upgrade path to perfection. At the same time, such programs develop interfaces and functionality that increasingly replicate those they supposedly compete against in order to make it easier for users to transfer their loyalty from one to the other.

For the purposes of this text, then, metaphor is to be understood simply as a variant of action upon an object or process, and not as something inherently necessary to interface design, no matter how useful it is or has been in generating an imaginal space for certain forms of interface. That is, metaphor takes a known set of

properties and behaviours from one domain—optics or fiction in the case of the magnifying glass—and transfers them to that of the computer as an explanatory or structuring device. With every interface metaphor, there is a point at which its explanatory or structure-providing advantages collapse in the face of the capacity for mutation in the universal machine, the computer, and what it connects to. At the same time, as will be seen later in the consideration of games, there are conditions in which it is precisely this artificiality, and in their use as exploratory imaginal devices, that they have their uses.

I THOUGHT I WAS SEEING CONVICTS

*I Thought I Was Seeing Convicts*⁶ is a documentary, largely composed of “found” material,⁷ by the filmmaker Harun Farocki. Much of the footage is of the insides of a California state prison, Corcoran.⁷ Cut in with images and sound from the place, and with a prison staff training video, are short sequences of computer interfaces.

The footage from Corcoran surrounds a court case from the end of the nineties in which prison guards were alleged to have set up fights between members of rival gangs within the prison’s exercise yards. As with most U.S. prisons, inmates organise themselves into gangs based on outside loyalties and racial and regional groupings. Introducing a prisoner from one gang into a yard being used by members of another produces a conflict over territory. For the guards, this is a reproduction of gangs’ conflicts with each other rather than the authorities. It also condemns participating inmates to further convictions. (This is crucial under the “three strikes” system, which can be leveraged to start a prisoner off with a sentence for a small charge and, via a series of staged incidents, leave them as permanent residents and sources of budget for staff and facilities.)

Watching the yard by video, and from watchtowers, guards bet on the outcome of fights they set up in this way. At other times they “break up” the resulting fights by shooting the unarmed people involved.

This video installation is crawling with interfaces. What implications does it have for them?

I. INTERFACE AS DISTRIBUTED THROUGHOUT AND INDIVISIBLE

The particular interface I am interested in here is that put in place in the architectonics of the exercise yards, and the cameras and procedures used to control and to execute the men in them. The user is a prison officer, or a command structure of prison officers. The shape of the yard is like a slice of cake, a segment. At the apex of the segment is a video camera. Watching the feed from the camera is a guard.

If we are to take Laurel’s definition of an interface as “a contact surface [that] reflects the physical properties of the interactors, the functions to be performed, and the balance of power and control,” we are in a quandary. Where is the interface? In the architecture, the shape of the yard that perfectly matches the area viewed by the camera? In the shape of the lens, its refractive capacity? The circuits that turn the light from the lens into a series of pixels? The slow scan of the stored video images? The height and relative scalability of the wall? The colour of the walls? The minds of the prisoners? The regulations ostensibly governing the behaviour of the guards? The range and calibre of the guns used to kill unarmed prisoners? The skills used to stage a fight and select a target? The relations between prisoners? The records kept on prisoners and groups of prisoners? The multiple capitalist and racist mechanisms in which the prison is embedded and which it, as an industry, depends upon and reproduces? The legal system? The system of property? The idea of an individual subject accorded rights? The “three strikes” process? The protocols of wounding, honour, loyalty, and fighting within the racialised gang-system of the prison culture?

We cannot here consider the interface between guards and prisoners to be solely representational in the way that a standard computer desktop is sometimes understood to be. The interfaces here operate in many ways, through multiple procedures. Whilst the system they instantiate is fundamentally hierarchical, they also operate by means of networks of mutually reinforcing patterns, ideology, structure, and material. What the notion of interface allows us to do here is analyse how they link, how one process

passes from the domain of one axiom into another, how processes are reconfigured, stripped down, simplified or made amorphous from their passage from one medial, architectural, racial, juridical regime to another. It is a particular pathway through these that the guards were able to “hack” in order to realise a level of brutality that could not be officially countenanced, or even acknowledged as having happened.

The events at Corcoran stage in effect the transition that Gilles Deleuze⁸ notes when he talks about a shift from a disciplinary society⁹—which operates by confinement and naming—to a society of control—in which behaviour is modulated, as often as not using the even older device of free will, rather than molded. This modulation is ongoing, processual—a process of relational development rather than fixedness. In a sense, what is discussed here in terms of interface is how—even in the archetypal domain of disciplinary power, the prison—these two modes of power combine, how they stack up and combine, and how one mode can assume dominance over the other.

At the same time, it forces us to reject any accounts of interface as being solely or primarily to do with representation, about the manipulation of elements that are separate from the structure of the surface layer. Interfaces code in advance how and when something occurs, but cannot necessarily determine it. (It is always in negotiation with another part of the system—CPU resources, for instance.) The vectors that connect one thing to another, an instruction to an object, a node to another, a layer to a filter, are always political at the same time as they are technical and aesthetic.

To describe a structure such as a prison as a series of interfaces risks flattering the libido of the prison. It becomes something separable, the discharge of a series of pre-ordained functions, a rational, managerial process ordained by science. Discipline as a “mold” allows the interface to remain something discrete, neutral. Control as a process of constant “modulation” is that neutrality gone mobile, that soaks into everything, but that chops and swerves, demanding constant renewal of adherence to codes and processes. This is what the guards were able to manipulate, the

interface between discipline, in its predictability, and the vaporous insinuations of control.

At their Palo Alto Research Centre, Xerox once staged a well-known experiment with the tagging and positioning of workers in a type-two interface. Co-workers and managers, as they moved around the building in the course of a day, had the ability to find anyone they were looking for, what they were working on, what telephone or other address they could be reached at, and their availability for communication for various levels in the hierarchy. This is typical of a control interface, but not appropriate for the class of worker that is allowed to experiment upon itself, and the system was soon dropped.

II. INTERFACE AS MONITORING AND CONTROL OF A REDUCTIVE, INDEXICAL MAP OF SEPARATE ELEMENTS

Alongside the footage of the prison, Farocki cuts in, on the two screens the interface plays on, material from other kinds of control systems. One piece of software is a schematic rendering of a building’s floor-plan. It allows an operator to switch lights on and off and to open and lock doors by clicking on symbols embedded in the schematic. Other footage shows a stock recognition system built into some kind of surveillance device. The main window on the screen is a video feed from a camera following someone in a supermarket. As the shopper picks up and examines articles from the shelves, a series of pop-up menus allows the operator to specify and record the items that the target touches.

Richard Sennett describes an interface of this sort in a Boston bakery. A “user-friendly” interface had been installed at the front end of a baking system to allow workers to control bread production without the need to deal directly with the raw materials, to make judgements about the readiness or consistency of dough, to shape loaves, and so on. The machinery allows flexible specialisation rather than mass production. The work is done by a transient force of part-timers or temporary workers supervised by one fore-

man. It is deskilled; operating the system demands pressing buttons on a screen, and

monitoring the entire process via on-screen icons which depict, for instance, images of bread colour derived from data about the temperature and baking times of the ovens; few bakers actually see the loaves of bread that they make. Their working screens are organised in the familiar Windows way; in one, icons for many more different kinds of bread appear than had been prepared in the past—Russian, Italian, French loaves all possible by touching the screen.¹⁰

The interface, however, doesn't match up to the baking process every time. Much of the product is wasted when the actual temperature, the rising of the loaves, or some other factor fails to match the representation on screen. There is a skip outside full of burnt loaves, victims of automated friendly fire. Workers controlling the process via the interface have no need for an understanding of how to bake bread. The process is illegible to them.

Whilst the interface is extremely easy to use, its relation to the procedure it manages is flawed. The monitoring and control of the baking process is not deep or detailed enough to allow this. Additionally, the "sociotechnical" and economic arrangements of the bakery rely on having a workforce with no actual baking skills—this would increase costs.

Sennett describes "alienation" experienced by an older generation of bakers as "the unhappy disassociated consciousness which reveals . . . things as they are and where a person stands."¹¹ By contrast, "flexibility creates distinctions between surface and depth; those who are flexibility's less powerful subjects are forced to remain on the surface."¹²

The closing of doors and switching of lights on and off shown in Farocki's film is very similar. Elsewhere, security guards working twelve-hour shifts at minimum wages—watching monitors, wiping bar codes, checking faces—have the same relationship to the processes they control, and those that shape their jobs, as the push-button bakers. Like call-centre workers working with menus,

forms, databases, and series of written scripts for their speech, plus a time-per-call quota, the task is to be an interface, a stratum. As with Laurel's description of interface, this is a surface that is thick, that bristles with connections, blockages and channels, variable speeds, timeframes, and routines.

Performing a surface, manufacturing an alienated interface, double consciousness,¹³ is an essential capacity of life in the "mode of information."¹⁴ We must create faces, bubbles, blips, strings of delay, backchannels, and sabotage in the domain of work. This, rather than submerging into the well-bloodied trap of "realising our full potential" in the terms of a rigged productivity. Therefore, whenever an interface promises to make something "clear" or speaks of allowing something to work in just the simplest way possible, it must first of all be assaulted with questions, yawns, and scripts rather than rewarded with immediate identification.

It is this gap between a model of function and its actuation that in some cases describes a degree of freedom, and that in others puts into place a paralysing incapacity to act. It would not, for instance, be over-welcome in the steering system of a plane. The politics of the indexical map is produced precisely in its power to command an isomorphic relation between itself and what it controls. It must not, it cannot, slip . . .

III. INTERFACE AS INDEPENDENT ASSOCIATIONAL STRUCTURE

Only at this point does an interface explicitly correspond to the logical processes of a computer: to write, store, delete, read, and calculate on the basis of these functions. It must be added, of course, that the interface of the third kind is never, of necessity, permanently "independent" of those elements that it provides an associational mechanism for. It may, of course, given an appropriate level of access, be rewritten.

In order to develop a provisional understanding of this type of interface, I want to approach it through video games. Steven Poole's book *Trigger Happy*¹⁵ provides a good starting point for understanding the dynamics of interface and what might be a

kinaesthetics of information. One of the key themes in the book is how interaction is enhanced by the internal data-structures of the game, the models it has to govern the motion and behaviour of objects, vehicles, and bodies within the game, and how they behave on screen in relation to the user-inputs.

Writing a racing game, for instance . . . the car can be defined as a certain mass resting, through a suspension system, on four wheels, which have a certain frictional relationship with the road. From this very simple mathematical definition, it turns out that that “realistic” car behaviour, such as oversteer and understeer, load-shifting and tilting, come for free.¹⁶

What *Trigger Happy* shows here is that the simple application of Newtonian physics—acceleration, gravity, inertia, and so on, rather than a “full” model of the material world—creates a small set of axioms that combine to give a rich array of play interactions. Indeed Newton gets dropped swiftly enough when a little mutation makes for more exciting game-play or opportunity for a cartoon-style plasmatic world. Just as the “realistic” movement and handling of a car is gained by the mutual interplay of various mathematical models of certain aspects of the mechanics of a moving car, in other games very simple behavioural codes—such as when to bob up and down from behind a crate during a firefight (any amount of shooters), or when to flee a room when a leader figure is shot down (Halo)—are also derived “for free”¹⁷ by the interplay of simple software agents governing dominant or recessive simulations of “emotion” and behaviour in non-player characters.

Much of this useful book is an extended consideration of how the axioms of games contribute to a multiple self-enframing that is either compelling (because of the richness of variations to be brought about by the combination of their various types of capacity) or enjoyable for simplicity coupled with combinatorial unpredictability.

The sweetest pleasure in many games is their coherent range of dynamic properties and the interplay between them. This is some-

thing relatively independent of processor power—think of Pong or Tetris—and extends to the ergonomic and audio qualities of a game as well as the visual. Current game platforms allow thousands of tiny variables to be computed on the fly according to complicated interactions of multiply intersecting numerical models. Early video games, and those still played on a Game Boy or on emulators such as MAME, kept such computations down to a minimum. What is important for Poole is that they are an always-consistent set of properties. Thus, what he calls their “realism” is not predicated on their being “authentic” but on internal consistency. The axioms can be codes, rather than what we understand as natural “laws”; whether these correspond to those experienced outside of the screen or are of a completely novel kind made possible by computerised media is immaterial.

Such insights into games compare interestingly with one of the classic rubrics of user-centred design, found exemplarily in the work of Donald Norman. The focus should be on “interacting with the task, not with the computer.” In a video game, the task is precisely to perform the interaction with the computer, for as long as it remains pleasurable or compulsive. (It is this blurring of the focus of interaction, where one interacts and works within patterns of information, folded into further patterns, embedded in matter, that allows for actual abstractions such as the concept of “immaterial labour.”)

Potentially, at least, the standard grammatical positions of subject and object which work-oriented usability theory is predicated upon become caught up in arrays of dynamics that are processual rather than fixed and concerned with the interplay of freedoms and constraints rather than outcomes. So it is easy to imagine that we leave matter behind.

However, a reading of video games shows that the best of them—and there are plenty which simply translate the tiresomeness of work—still have a concept of task, which is now this very processuality, built in. There, the pleasures of the game become those of multiple virtualities. This is a virtuality as becoming and as involvement, a link between Hayles’s use of the term and that of Deleuze, who says, “What we call virtual is not something that

lacks reality but something that is engaged in a process of actualisation following the plane that gives it its particular reality.”¹⁸

Such pleasure is found in how games borrow or, by virtue of interaction, differ from the codes of other formations: film, in terms of the phenomenological and informational capacities of different “camera” angles, pace, lighting, and framing conventions in various kinds of game; simple narrative modes, such as quests, folk tales, whodunits, and multi-choice gamebooks, in how they differ from them in terms of the linear irreversibility of the sequences and the granularity of action; the potential mix of visual codes, photorealism, Albertian perspective, animé-style deformation, etc.; how stylisation, reaction, timing, and patterning are transduced from different sports, plots, weapons, and vehicles, and bring with them gender codes, bodily capacities, different kinds of action amplification and kinetic fluidity, one-game-only finger skills built into muscle-memory, informational stamina, how the interplay of different codes can be thought and sensed into. This “realism” is also what is gross about many games, gross in the refusal to stage these conventions as axioms, as synthetic.

Now, however, we can return to Norman’s formulation of a good interface. The task to be operated on is now to be operated in: patterns of information operating on other patterns of information. The task is to reformulate the task, to be coupled to that process, to be absorbed. At the same time, the position of the interface-designer needs to be blown open. Norman is right when he comments that “every interface designer is also a system designer,” that “nothing can be designed in isolation.”¹⁹ However, there is within interface design a tendency to close down what counts as an element within a system. It is an insight, but not sufficient, to establish that a designer of a computer system needs to make sure that it is capable of being cabled up to the other electronic media systems the user might have. We need an understanding of systems that never stop in their unravelling and invention of new connections.

Neither, however, should connections, combinations of things—things are always combinations—be welcomed simply on the basis of their hybridity. Paul N. Edwards describes a presenta-

tion of a computer game with an output beyond peripherals that might “intuitively” need to be connected:

As we rode the eye of the bomb to the white flash of impact, we experienced at once the elation of technological power, the impotence and voyeurism of the passive TV audience, and the blurring of the boundaries between “intelligent” weapon and political will.²⁰

This hybrid is recounted as Edwards describes General Norman Schwarzkopf or some other walking abscess playing video with the bombing of Baghdad in 1991. Although this sentence might overestimate the case for the existence of political “will” as a form of individuated intentionality rather than the playing-out of drives and capacities built into various mutually stimulating formations and dynamics, it does show that the interplay of certain medial, computational, erotic, political, and material arrangements are inherently part of a “system” that is ostensibly only technical. How such combinations are forged, how they proceed, their constitutive axioms and protocols, need necessarily to be taken up in a consideration of interface.

The massive gallimaufry that is Microsoft Word has been discussed elsewhere,²¹ but it is perhaps useful to compare these kinds of programs, the applications that fill the hard drives of most computers, with the kind of cultures of interface that Poole discusses in *Trigger Happy*. One distinction is between simulations and games devoted to play:

Simulation . . . promotes in certain genres (driving, flight, games) the primacy of supposed “realism” over instant fun. A true video game deliberately simplifies any given situation (imaginary or real) down to its essential, kinetic parts.²²

Such applications simulate, for example, a writing machine, a perfection for a certain sort of textual production, modelled by systems designers whose conception of writing is formed by the boundaries of the workplace. This is not to say that they form a

coherent whole that is ever embodied in even one place of writing (indeed some of their elements are of fundamental operative and conceptual difference) but that the composite writing-system²³ they embody is that composed in the conjunction of the series “writing” with the series “work.” It is the clutter of “realistic” models of writing or other processes, which at the same time hide their acculturation, that Word and related programs insist upon that makes them close to simulation games.

At the same time, all of computing rests upon simulation at the most fundamental level—for instance, the simulation of CMYK on RGB screens. What is suggested here is that those simulations are not universally navigable in the same way, and as a result, need to be made in a way that is interrogable. Here we can take something up from Poole’s implicit suggestion that a more enthralling game is one which connects the user immediately at a deeper level with the underlying axioms of the game—software that reveals its processes as it enacts them.

THE ONE INSIDE THE OTHER

The three types of interface suggested here can clearly also be seen to operate one inside the other at different moments. When you use a WYSIWYG (What You See Is What You Get) interface in a Desktop Publishing program, you operate on an interface of the second kind, using the conventions of the third kind. There is a reference to an object, the document.

The process is also reversed in programs such as those which allow the automated monitoring of employees by keystroke surveillance or web-logging—an example of the second type—built into word-processing or web-access software—an example of the third. One must be clear that this is not simply something reserved for work subordinates (although it is more likely to be applied the more mechanical the demands of work are) but something unleashed at the outset by automation. At another location, at another speed, within the layers of capital’s transduction of skill, one could imagine a program for building up data for the use of expert trading systems operating by secretly monitoring the buying and selling patterns of stock market traders.

The scale or detailing of references to an object is another axis of difference. One distinction between the first and third mode of interface is that once an interface becomes entirely digital, there is no room for a vague action. Comparing the use of computers by artists and designers, one research group notes that there is a reluctance to use computers in the initial stages of a work.²⁴ Computers do not usually provide for good initial sketches. Boolean logic ties any interface action into a yes or no, where any mark into data is as fixed as any other element. Equally, every object or element of data in a file, once it has been saved from the buffer, has the same status. No matter how many layers are assigned to it, the undo function operates in linear time.

In the theory of information and control systems, primarily using interfaces of the second kind, there is a distinction between first- and second-order control. In the first case the control of a “steady-state” of a process is given over entirely to a mechanism—a thermostat, for instance. Second-order control is where the operator provides an overview of these processes, interprets and recognises patterns, and is able to react rapidly to them.²⁵

One model of the “human data processor” echoes this distinction in the way in which it produces a division of labour between mental processes, a “cooperation between a high-capacity parallel-processing system that functions subconsciously, and a sequential conscious processor of limited capacity. The sub-conscious processor takes care of routine tasks, and only in unfamiliar environments and tasks is there a need for higher-level control of the processing by the versatile, but slow, sequential processor.”²⁶

Thus, the models of discipline and control are recapitulated at the structural level of the interface and of the subject modelled by it. However, as we have seen, once control folds in upon control, messes with its too-easy seriality, opens it to inspection, blocks, breaks, scratches, and streams, there is perhaps the opportunity for something else to emerge.

DESIGN: THERE ARE PEOPLE CONNECTED TO THIS COMPUTER. IT WILL SHUT DOWN IN _10_ MINUTES

Typical in user-centred design research is the statement to test-users trying out a prototype of a new piece of software: “I’m testing the product; I’m not testing you.”

Typical of statements for the back blurb of third-party application manuals is, “Need to learn Blah Blah Version Blech Fast? This is the book for you.”

Whilst the usability researchers depend for the effectiveness of their research on generating an environment of trust between themselves and the test user, once the software is inserted into a work environment users will specifically be tested against how they match up against the software. The cruelty in this relation is a direct inverse of the institutional niceness of the usability test. The more that is invested in making the software user-friendly, the more employer, co-workers, and technical staff are justified in demeaning the worker who has not internalised its regime. Research based on making software achieve fitness to desired task is as much about enhancing productivity and regimes of work as it is about the pleurability of a tool fitted perfectly to its purpose.

It is not, therefore, simply a question of expertly making a tool most fit for its purpose. Rather, we might begin by tracking the various mutations of the series, axioms, drives, enframements, formations, and so on that a work brings together and finding ways of staging that combination without blocking out the conceptual and material potential for recombination in different forms, or any access to them by others.

What follows is to understand that “output” can only ever be a provisional term. For the contexts in which most software is used—work—the question, “What does the user need to get out of this?”—as if users were agents that only come into composition with the software of their own volition—is infinitely loaded. Following this, “whole tasks” that can be measured and designed through at every stage to increase or improve their performability, pleasure, coherence, comprehensibility, and function only ever exist temporarily. Even when the apparatus for their execution is designed, manufactured, and distributed in the millions, the task whose execution

they embody may change or disappear. The devices will be erased or recombined, part used, bastardised. It is ensuring functional openness to this bastardisation which needs to be a primary task of software interface design.

THERE IS NO CALCULUS OF BECOMING

What remains if we are to take such a discussion of interface seriously is to ask how this process, rather than a “position,” of interface design can itself be opened up?

The poet Jackson Mac Low had it this way. The poet is “pre-eminently the maker of the plot, the framework—not necessarily of everything that takes place within that framework . . . creates a *situation* wherein he invites other persons and the world in general to be co-creators with him! He does not wish to be a dictator but a loyal co-initiator within the free society of equals which he hopes his work will bring about.”²⁷

Mac Low, in almost classical statement of the “open work”²⁸ policy of some of the later twentieth-century avant garde, clearly knew what was at stake in the capacity of poetry to generate actual freedoms of perception and language, and—relevant to computational culture—the non-determinate processes of chance often built into his work. At the same time, the claims for the poet as a stable position, as master of signification, the *situationist*, which might be read into such a passage need themselves to be thrown over to the same processes.

Franco Berardi (“Bifo”), in an early text on computer-based media, states, “Whenever a social universe forms adequate to the technological and communications potential of actual social brainpower, we call it Renaissance.”²⁹

There is something necessarily circular about Bifo’s formulation here in that it describes a process that is continually catching up and changing the entities that compose it. When the poetics of creation in Mac Low’s terms expand to generate an unfolding of their full social, aesthetic, and technical capacity for resonance, such a moment creates an explosion. Such an explosion can take place at many levels of scale: the molar politics of class or individual; a flowering coalition of insight, rhythm, and sensation famil-

iar, but not often enough, to culture; it can take place in software and by means of software or in those moments where absolutely nothing is left untouched.

In most cases it is, along with the workers in the bakery described by Richard Sennett, entirely sensible to answer interface with utter indifference. There is so much boredom, structural cruelty, and stupidity governing the physical properties of the interactors, the functions to be performed, and the balances of power and control they perform and embody. The slow deliberate violence of the state burying its hatred for life inside the body of a living prisoner—a relation embodied in the apparatus directly surrounding them, the buildings in which they are fixed, and the society that provides their cloak—is one example of interface, is one which can only be met adequately with its destruction.

But in other moments and dynamics of interface, it is this unleashing of patterns of potentiality and innovation that Berardi calls a renaissance (which sometimes comes as revolution, and other times as the simply careful and persistent attention to opening up a particular range of possibilities by virtue of “recombinant intelligence”³⁰—intelligence that realises its own multiple virtuality) that is at stake in what has momentarily settled up as interface. And it is by what it combines with, where it goes, what it makes happen, that we will know whether it itself is worth anything more than the usual indifference.

NOTES

1. Brenda Laurel, ed., *The Art of Human-Computer Interface Design* (Reading, MA: Addison Wesley, 1990), p. xii. Laurel uses this definition of interface in a context where she is describing two kinds of doors: one that allows ingress and egress by both sides by means of a handle—the normal internal door—and another installed at a secure government site in which face and name had to be given in order to gain entry via a door with no handle.

This definition of interface is used for its relative precision. Other, equally influential, definitions of the term can be found which encompass a more substantial set of arrangements and processes. For instance, Jef Raskin suggests that interface is “the way you accomplish tasks with a product—what you do and how it responds—that’s the interface.” *The Humane Interface: New Directions for Designing Interactive Systems* (Reading, MA: Addison Wesley, 2000), p. 2.

For two useful texts on doors that explore in detail some of the micropolitical arrangements they embody, and which are suggested in brief by Laurel, see Bruno Latour, “Where Are the Missing Masses? A Sociology of a Few Mundane Artifacts” in W. E. Bijker and J. Law, eds., *Shaping Technology/Building Society* (Cambridge, MA: MIT Press, 1992), and “The Berlin Key, or How to Do Words with Things,” in P. M. Graves-Brown, ed., *Matter, Materiality and Modern Culture* (London: Routledge, 2000).

2. N. Katherine Hayles, “The Condition of Virtuality,” in Jeffrey Masten, Peter Stalleybrass, Nancy Vickers, eds., *Language Machines: Technologies of Literary and Cultural Production* (London: Routledge, 1997), p. 183.

3. The argument is very well developed in Dona Gertner and Jakob Nielsen, “The Anti-Mac Interface.”

4. The classic text on metaphor, which influenced much of the use of this type of device in computer interface, is Lakoff & Johnson, *Metaphors We Live By* (University of Chicago Press, 1980).

5. The version referred to here is Version 2, first shipped with Mac OS 9.0.

6. Harun Farocki, *I Thought I Was Seeing Convicts* (2000), two-channel video installation. Two texts by Farocki covering related areas are “American Framing: Notes for a Film about Malls” and “Controlling Observation,” both in Harun Farocki, *Nachdruck/Imprint. Texte/Writings* (New York and Berlin: Lukas and Sternberg and Vorwerk 8, 2001).

7. The Corcoran prison website, displaying about as much information as a children’s trading card, is at <http://www.cdc.state.ca.us/facility/instcor.htm>. References to this series of episodes can be found at <http://www.sonomacountyfreep->

ress.org/police/corcoran.html. Some of the footage is at <http://www.cnnsf.com/newsvault/media/abusemov.ram> and <http://www.web.amnesty.org/ai.nsf/index/AMR510982000>.

In an enquiry, the guards said to be running the “gladiator” fights were declared innocent. Subsequently, on November 10, 1998, the California Department of Corrections made an out-of-court payment of \$825,000 to the parents of Preston Tate, a prisoner killed in such combats. In a scene included in Farocki’s installation, he was shot dead by a guard whilst being attacked by another prisoner. Subsequent to this and other episodes, water cannon have been installed in the yards.

8. Gilles Deleuze, “Postscript on Control Societies,” in *Negotiations*, trans. Martin Joughin (Columbia University Press, 1995).

9. In a number of early books, Foucault proceeds through a series of case studies of different disciplinary formations which establish the usefulness of this term: *Discipline and Punish, The Birth of the Clinic, Madness and Civilization*, etc.

10. Richard Sennett, *The Corrosion of Character: The Personal Consequences of Work in the New Capitalism* (New York: W. W. Norton, 1998), p. 68.

11. Ibid, p. 70.

12. Ibid, p. 75.

13. For an extended discussion, see “Criminal Minded,” and an application in relation to search engines in “Break the Law of Information.” Following the Critical Art Ensemble’s useful theorisation of the DataBody in *The Electronic Disturbance*, one website offers to manufacture elements of a bogus DataBody “Tracenoizer—disinformation on demand” (2001) at <http://www.tracenoizer.org/>

14. Mark Poster, *The Second Media Age* (Cambridge, U.K.: Polity Press, 1995).

15. Steven Poole, *Trigger Happy: The Inner Life of Video Games* (London: Fourth Estate, 2000).

16. A number of hacks of video games take advantage of precisely this; for instance, Jean Leandre’s “retroYou r/c” (1999), downloadable at <http://www.retroyou.org>; JODI’s “Untitled Game”

at <http://untitled-game.org/>; and various work by Nullpointer at <http://www.nullpointer.org/>. Much of this kind of work exists outside of “art” frames of reference, often only being explicable to those who have spent time developing their familiarity with the underlying structure and potentials of such programs. To spend time in such a context is, however, very rich in the way it allows the sheer artificiality of software to become known, and then to become something that revels in its own deranging plasticity.

Console games point to such currents within computer-game culture, but cannot but fail to match them. The facility to choose “Moon Physics” in “Tony Hawk’s Pro Skater 3” (Activision, 2001) merely gives you a slightly looser version of earth gravity. The “expert” culture of cheats built into games which give the player everlasting armour or guns, perfect balance, and so on illustrates how much playing with the different combinations of axioms available in a game lies at the root of their fascination.

17. Poole, op. cit., p. 116.

18. Gilles Deleuze, *Pure Immanence: Essays on a Life*, trans. Anne Boyman (New York: Zone Books, 2001), p. 31.

19. Brenda Laurel, op. cit.

20. Paul N. Edwards, “Cyberpunks in Cyberspace: The Politics of Subjectivity in the Computer Age,” in Susan Leigh Star, ed., *The Cultures of Computing* (Oxford: Blackwell, 1995), p. 75.

21. See “It Looks Like You’re Writing a Letter: Microsoft Word.”

22. Poole, op. cit., p. 41.

23. Friedrich Kittler, *Discourse Networks 1800/1900*, trans. Michael Metteer with Chris Cullens (Stanford University Press, 1990).

24. Colin Beardon, Sue Gollifer, Christopher Rose, and Suzette Worden, “Computer Use by Artists and Designers: Some Perspectives on Two Design Traditions” in Morten Kyng and Lars Mathiassen, eds., *Computers and Design in Context* (Cambridge, MA: MIT Press, Cambridge, 1997), pp. 27–49.

25. For example, L. Hirshhorn, *Beyond Mechanisation* (Cambridge, MA: MIT Press, 1984).

26. Jens Rasmussen, "The Human as a Systems Component," in H. T. Smith and T. R. G. Green, eds., *Human Interaction with Computers* (London: Academic Press, 1980), p. 70.

27. Jackson Mac Low, cited in Jerome Rothenberg, *Revolution of the Word: a new gathering of American avant-garde poetry, 1914-1945* (Boston: Exact Change, 2000).

28. See, for example, Umberto Eco, *The Open Work*, trans. Anna Cancogni (Cambridge, MA: Harvard University Press, 1989).

29. Franco Berardi (Bifo), *Sand in the Mouth*, trans. Paula Casanova, *Semiotext(e)*, Vol. 4, No. 3, 1984, p. 25.

30. Franco Berardi (Bifo), *La fabbrica dell'infelicità. New economy e movimento del cognitariato* (Rome: Derive Approdi, 2001).

~~THE LONG, DARK PHONE-IN OF THE SOUL~~

~~In Los Angeles they are collapsing in the streets. Down at the stock exchange, brains are melting. More is happening than anyone can possibly cope with. Information overload—the very contemporary scourge.~~

~~Possibly the most abundant and competitive life form in this apocalyptic effusion of detail: factoids. Shake a media executive for an opinion, and along with his wallet and dandruff you're likely to get: "A typical issue of the *Los Angeles Times* contains more information than a seventeenth-century Englishman was exposed to in his entire life."¹ Notwithstanding the fatuous unprovability of such an assertion, it is one that resonates with a general apprehension. Rather than being faced with a qualitative improvement in intelligence, the human race is doomed to fry under the sheer quantitative increase of infotainment to be processed. In an information economy in which anxious formats format an anxious reality, there is a handy answer being proffered. For delicate sensibilities exhausted by mental stimulation, intelligent agents are hailed as just as sure a tool for coping with the spew as a machine gun is for doing business with a banker.²~~

~~Independent software agents that roam the nets; crawlers; ultra-personalised data services from the aggressive to the ambient; insidious taxonomies sheathed in unctuous butlers or data-santas with the tastes of a magpie and jammy hearts of gold. But before we get into the technical specifications . . .~~