Interrupted Interface

On the Cybernetics of Digital Design Process

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From the viewpoint of Batesonian cybernetics, 'conscious purpose' and 'artistic process' are distinct ends of a spectrum of the functioning of 'self'. The conceptual stage of the design process is essentially an artistic activity unencumbered with accuracy, dimensionality, scale, program or even tectonics, albeit all of these maybe tacitly present at the 'back of a designer's mind'. Artistic activities involve broad mental processes that are beneath the stratum of consciousness. By definition, consciousness is selective awareness; it is linear in execution and limited in its capability to synthesize complex parameters. One of the central questions of this paper is "if artistic process requires one to abandon, or relinquish conscious purpose at the time of the generation of the work of art, and if the early stages of artistic process is a result of a vast number of 'unconscious' forces and impulses, then how can the computer, which demands (and thus propagates) geometric precision, focused operation and rational execution, be part of that process?" This paper will explore how, cybernetically, the computer can be 'coupled' with 'self' (via a visual interface) and the artistic process. Three specially devised conceptual design exercises—namely BurrDesign, BlinDesign, and BlitzDesign—and three corresponding "interruptive" computer interface modifications were deployed in an introduction to digital media course. The results of this study are now under consideration for their effectiveness in promoting conceptual design using the computer, and how the 'self' might form a cybernetic whole with the machine. The findings could have implications in design pedagogy, informatics and interface design.

Keywords. *Design process, pedagogy, cybernetics, interface design, theory.*

Introduction

"The artist may have a conscious purpose to sell his picture, even perhaps a conscious purpose to make it. But in the making he must necessarily relax that arrogance in favor of a creative experience in which his conscious mind plays only a small part. We might say that in creative art man must experience himself – his total self – as a cybernetic model. "
-Gregory Bateson, Steps to an Ecology of Mind

This paper presents a pedagogical study aimed not only at clarifying the role of the computer, as with this case, in the design process, but also questioning the directions taken by computer interface design and software design.

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Early Stages of Design Process

Historically the intent of a design/designer has been considered the essence of creative pursuit. Numerous attempts to discern the "exact intention" of the designer have lead to a better understanding of the process itself. Often beginning with a conceptual sketch, the designer's original intentions – or creative notions, were typically further understood only when translated into three-dimensional geometric forms. While there have been many attempts, by places such as the MIT's Media Lab, to develop interfaces that "read" and "understand" the designer's intentions these devices are predicated solely on "intent", situating them postpositionally beyond the moment of creation. Is it possi-

ble to envision/conceive a design process where the thresholds of digital representation are simultaneous (coterminous) with those of artistic creation?

Intoxication and Accident in Design Process

It has often been stated that a poet should "write drunk and edit sober. " As Dizzy Gillespie said, "First you learn the instrument, then you learn music, and then you forget both and just blow. " We all know that it is particularly difficult if not impossible to achieve such a state of "intoxication" with the computer. Often students, as well as professionals who begin working on the computer tend to freeze-up, becoming overtly focused and tense while engaging the computer in their design process. This is due in part to the precise, exact, focused and goal-oriented approach that the traditional interface seems to require. Such rigid or fixed interaction in no way helps to foster relaxed, playful, serendipitous discovery, which we believe is essential to an inspiring, enduring and captivating design proposition. In his *Reminiscences*, Kandinsky states that, for him, accidents allow a puzzling play of forces that he experienced as alien to himself. As he put it, "I owe much to these accidents: They have taught me more than any teacher or master" (Kandinsky, 1964).

Transcend the Medium

We submit, following Gregory Bateson's expositions on the creative process, that in order for the computer to become a *partner* (Negroponte, 1970), or a *pet* (Greg Lynn, 1999), we must consider the designer and the computer as a cybernetic system whose flows and connections could be manipulated through interruptions and connections of perception, conception, manipulation and creative mis-reading. In the vein of Kandinsky's realizations, the process could somehow be interrupted along the trajectories of imprecision, inexactitude, nondimensionality and multivalency, thereby precipitating a creative mis-reading of the designer's commands/ intentions that would allow serendipitous

discovery. Coop Himmelblau, Frank Gehry and others were known to adapt such playful approaches using traditional media. Coop Himmelblau had experimented with such methods as sketching while eyes closed, discovering patterns through 'accidents' of media and similar non-linear processes (Jencks and Kropf 1997). Given the results of such precedents, it's clear that the designer must "transcend" the medium and its limitations in order for any meaningful creative discovery to occur by simultaneously working within the framework of a given medium and interrupting its rigidity in order to transcend it. This realization that the real struggle in the creative process is to balance the dependence on and independence from the medium's strengths and limitations. Thus, it is possible to "have it both ways": use the medium and transcend the medium.

The Interruptions

As a part of a carefully framed and executed exercise, we had devised three different ways of interrupting the visual computer interface of, in this case, form*Z. The students were not previously exposed to form*Z other than a tour of what-is-what in the software. It was our intention that the students not be able to speculate beyond the limits of the interrupting device. There were three sections of approximately 18 students each, which were then divided into three groups per section:

BlurrDesign: The first group was assigned to computers with monitors, which had been covered with trace-paper making the interface hazy, blurred and ambiguous. Earlier these students had loaded a predetermined image (Landscape with Houses by Ceret Juan Gris, 1913) an underlay, and were now asked to "trace" what they thought they were seeing with lines.

BlinDesign: The second group was assigned to computers with monitors covered with an opaque sheet, thus completely blinded to what was transpiring on the computer screen. They were given an image (Man with Guitar by Georges Braque, 1911) and then asked to copy his work with lines, on the blind screen.

BlitzDesign: The third group had also loaded a drawing by Daniel Libeskind as an underlay but their computers were not covered, instead they were allowed to see what they were to draw but were limited in the amount of time to do so, given only ten minutes to trace all the essential "forces" of the composition. It was hoped that this limitation would force them to relinquish conscious choice of what to draw, and, instead, move with the eye intuitively.

Thus, all the groups had produced a field of seemingly random lines. Despite the seeming randomness, each line has a displaced yet analogous relationship to the underplayed drawing that guided the eye, the movement of the hand and the interrupted feedback loop. In a way, each field is a unique recording of this unique "accidental" relationship between the designer and the computer at that specific moment of interaction. Not surprisingly, although students in each group had started from the same source drawing, software and technique, each ended up with a very unique field of lines that would form the generative basis for the eventual architectural reality.

The software environment for all of the groups was preset with the same defaults to ensure a uniform framework within which they all could play and discover. At the end of the exercise, the students were asked to remove the interrupting devices and for the first time try to grasp, or make sense of, what they had drawn. Now faced with a complex series of lines crisscrossing the screen, the students were tasked with the problem of translating what lay before them into a meaningful expression of architecture. Using various derivation tools, the first step was to create a three-dimensional expression without regard to the issues of scale or site. The students were asked

Figure 1. Abstract Constructions by various students
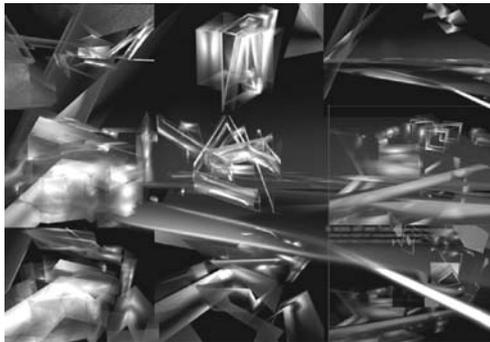
to formally interpret the obviously "surprising" results that they had arrived at without "intending to do so."

When viewing their work for the first time there was a great sense of accomplishment, a loss of apprehension – which often accompanies first time digital students, and of course the all too obvious seduction of form. Students, who may not have readily or easily accepted the digital domain as a vehicle for architectural discovery, were now seemingly enthused by the proposition. (image below: Brian Allen)
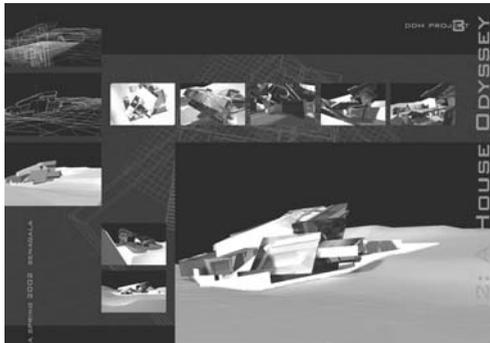

Figure 3. The Interrupting Machine

Figure 2. "2002: A House Odyssey" by Brian Allen (Image: Brian Allen)

Finally students were asked to choose a hypothetical or actual physical site onto which to situate their project, scaling it to an appropriate dimension. From here the students ultimately

translated their abstract 3D compositions into "concrete" architectural artifacts. Using architectural vocabulary of their choice the students had now taken their unconsciously conceived world/work and created viable, captivating, and inspiring design projects.

Thinking "Out of the Box": Ontological issues of interface design

A brief mention of the ontology of interface design, of which the CRT or LCD display monitors are a part, would be essential to describe the next stage of our efforts. Ontologically speaking, the premise of a personal computer and software design has been limited to the notion that it is the "inside" of the computer where all the action takes place. When we began thinking about interrupting the interface, the question arose of "where" the interruption should occur: inside, through manipulation of the system or outside through the addition of a physical installation. Two issues were at stake: early stages of design and beginning design students. We chose the "outside" option.

In an effort to realign, reframe and reconfigure the student's relationship to the computer and to "self," we have now developed a device that through its assembly and installation requires the student to make several purposeful and physical acts prior to entering the digital domain. This process, we believe, makes students more aware

of their own bodily presence and in so doing forces a paradigmatic shift during their initiation with the computer. The interface is no longer merely "soft" or "in there. " By installing the highly mechanized – almost medieval looking – device, the student assumes a position of power and dominance. Students that might otherwise have been apprehensive or even intimidated with working on the computer are allowed to establish a far less subservient posture that is typically seen in beginning students. They now see the potential and possibility of engaging the digital media beyond simply that which comes out of the cow-colored boxes.

Conclusions:

The students, for whom this was not only their first introduction to a 3D software but also to such an unconventional design process, responded with mixed feelings of excitement, frustration, and confusion. However, the majority of them could easily see the inherent value of such an approach, one that allowed them to make the design their own through a process of continuous negotiation of form, intention, and serendipity.

It appears, from the results, that the interface interruptions allow creative mis-reading of designer's intent and the displayed content, which stimulates, challenges and inspires imagination and discovery. In a critical opposition to the intent of software designers, the interface interruptions promote controlled accidents and serendipity as a basis for creative design. Furthermore, this study calls into question the present ontology and cybernetics of interface design, which needs further investigation.

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