

ARTISTIC REFLECTIONS ON MAN-MACHINE INTERFACES

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ABSTRACT

Man is limited by his belief structure. He is what he thinks he is. By changing his beliefs he can extend himself, and, conversely, by extending himself he can change his beliefs. The integrated man is not limited to just his left brain--his sequential, logical, analytic side-- or to his right brain--his intuitive, holistic, spacial side. By the artist becoming the engineer and by the engineer becoming the artist, an integration of the mind can occur that separates the "self" from the mind and allows the "self" to use the mind as a tool. It also establishes the computer as another tool one step beyond the tool of the mind. The person, now more integrated, can extend himself more easily through the mind, through the computer, and into the work.

KEYWORDS: man-machine, interface, art, Eastern, Tibetan, left-brain, right-brain.

INTRODUCTION

Some time ago, in order to help an individual understand and experience his true nature, the Tibetans formulated a series of experiments which they presented to the aspirant in great scientific detail. These experiments are intended to be applied by each individual to himself with results observed by himself with himself changing in the process. If all conditions that they specify are set up properly, the results are found to be of a universal nature amazingly independent of subjective interpretation. Although these experiments can be considered scientific in that they make use of the left-brain's view of the world as sequential in time and utilize the laws of cause and effect, they also make use of the right-brain's ability to visualize and understand things that are organized associatively. The ultimate aim is to understand reality in the only way it can be done--with both brain halves working together.

Through deep involvement with computer programming (a fundamentally left-brain activity) and art (a fundamentally right-brain activity), and through yogic meditation and experimentation, the author has come naturally to a view of reality as presented by Eastern philosophies. As a result of reading, meditation, internal experiments and

experiences, he reflects upon the relationships between the "self", the mind, and the computer. These reflections are not meant to be an end in themselves, but are meant to spur further thought by presenting a different perspective on man-machine interfaces and to serve as an introduction to the art that he is presenting with the talk. The art can be seen as reflecting this philosophy and was instrumental in helping him arrive at it.

REFLECTIONS

The application of computer technology to the solution of artistic problems may help an individual embark upon a potentially deep redefinition of the concepts of "mind" and "self". Forcing oneself to deal simultaneously with the wildly disparate procedures and evaluative criteria of scientific and artistic work amounts to nothing less than redefining or reintegrating one's personality. This reintegration turns out to be uncannily similar to the process of self-discovery proposed by several Eastern philosophies. The new fields of computer graphics and computer-assisted animation lend themselves easily to a person's attempt to unify various distinct as-

pects of the mind. In so doing, they promote, perhaps paradoxically, a SEPARATION of self from the mind. The difficulty of combining a predominantly left-brain activity such as computer programming with a predominantly right-brain activity such as drawing or painting prevents one from identifying completely with either side of the brain. In fact, this very difficulty forces the artist/programmer to confront the question of who he or she really is. Because of the deep conflicts involved, such a process of inquiry and self-examination, regardless of its positive results, can be difficult for the individual to sustain. One needs courage. Difficulties arise both in the recursive task of interacting with oneself and in the seemingly more objective task of interacting with a non-trivial machine. Within oneself one has to learn to move fluently between the right and left brain, between the emotional center and the intellect, between the subconscious and the conscious. The ideal is total integration. For an artist, interfacing to a computer should be tantamount to making the machine as much a part of himself as is his drawing hand. The ideal interface would be transparent--effectively "null". The emotional and subconscious aspects of an artist's work must be translated into machine instructions and computable data in a manner which minimizes loss of content. But constant involvement and identification with programming tasks can easily lead one to lose sight of larger concepts and purposes, even as they relate to the technical solution of those very tasks.

What presumptions are involved here? I have assumed the position of least compromise. I presume that the artist tries to get involved in his work as a total person. The artist can allow his "mind-forms" to present themselves as icons in his work, or he can try to become the very object of his own art. When he draws a flower, he BECOMES that flower. In his dealings with the computer, the artist/programmer does not rely solely on canned routines. He fashions aesthetic tools geared to his special needs. A piece is not created to fit existing tools; rather, new tools are created in order to render a formerly impossible or improbable work possible.

One ought to work toward the goal of establishing a sense of "being" which is independent of the various notions of "mind". This is admittedly difficult. Of course, the many traditional techniques for working toward this goal antedate computer art by thousands of years. I am thinking of meditation, tantra, or, more commonly, the method we all practice most of the time: merely doing, suffering, and learning--slowly and painfully. The purpose of this paper is to outline some new strategies for circumventing the commonly-practiced, painfully slow, trial-and-

error process of personal and artistic self-discovery. The course of such a search to discover the complete self would naturally be determined by the individual, but I shall go out on a limb and propose a desirable outcome: to come to the realization that the mind is just another tool; it is to be used; it is not, however, the locus of one's identity. In light of this realization, the notion of computer-as-tool changes radically. What was formerly viewed as a man-machine interface is now more correctly viewed as an interface between two minds-- or two tools.

Several questions arise at this point: Who controls whom? Does the artist control the tools, or do the tools control the artist? What sort of hidden dependencies should one be wary of? One would certainly hope that in any healthy, productive relationship between artist and computer, the artist would be in control. But that very basic, reasonable expectation is NOT, sad to say, borne out by experience. Most individuals, artists and non-artists alike, who have worked seriously with computers would be hard-pressed to answer the following questions honestly without also being forced to admit that their working relationship with the machine leaves much to be desired: If a program fails, do you feel as if YOU have failed? Do you IDENTIFY with computing tasks? Can you drop a computer problem at any time and work on it at will, or are you obsessed with it until you solve it? Do you feel frustrated in your dealings with computers?

If the artist can separate himself from the electronic mind, and also from his own biological mind, then he can control these tools and extend himself through them. Before confronting these issues, most individuals feel that there is no separation between "self" and body, in spite of the fact that the body completely changes itself every seven years. But if you identify with your body, you also identify with your mind; most probably, you are pushed and pulled about by whatever random associations your mind imposes upon you. You attempt to make your own future by projecting from the past into the mysterious void which looms "beyond" the moment. But in so doing you give in to any bothersome distraction that keeps you from living this moment to its fullest; you do not allow the future to take care of itself. Because of your mind's complete mastery over your self, you are prevented from experiencing your self, from feeling the beauty of this momentary existence, from feeling the love and compassion that exist in the moment. If this state of affairs is allowed to persist, it's fair to say that you are merely a walking machine, constantly remembering some past state in order to solve some anticipated problem in the future.

One must focus on the activity at hand, whether

it be graphic design, musical composition, telling a joke, or being a loving parent or spouse--whatever. No one should be a full-time programmer. The human spirit does not wish to dwell upon this task to the exclusion of all else, and it will certainly rebel if coerced. If a programming problem resists solution, use the subconscious to solve it. Remember that the code is only a tool, that it exists only to serve you, not enslave you. Let the problem settle in your subconscious; let it solve itself, while you become whatever you need to be in the meantime. The results are often surprising.

The same skills which enable one to program well or conduct successful scientific research can be turned to the emotional and rational struggle to teach oneself how to control the mind. The mental discipline and concentration of the scientist can be turned upon the mind to control it; if one is truly in touch with one's feelings and imagination, it is possible to experience viscerally the philosophically elusive concept of "moment". The ultimate and saving irony--pleasing, I suspect, to most programmers--is that the mind can be used recursively to undermine its own position of supremacy.

The primacy of the rational mind in the Western notion of "person" or "self" was painstakingly established over thousands of years. Persistent, eloquent attempts to refute, or even seriously revise, the Enlightenment concept of rational man have failed. It is apparently difficult for the biological mind to admit that it is not the locus of the "self". But ultimately, I believe that one DOES know truths which do not emanate from or originate in the "mind"--as we commonly understand that term. I would go so far as to say: You know all truths. Your primary task is to allow yourself to act upon that knowledge. When you identify solely with the mind, you end up defending your ego constantly. That's unpleasant and unproductive. But you need to defend yourself, because you know, whether or not you admit it, that the rational mind is not the true you. Fortunately, the true you cannot be hurt, try as you might.

The situation for the artist/programmer is particularly acute: If you persist in identifying with your mind, how will you deal with the threatening situation in which a solid-state mind becomes a plug-in extension of your biological computer? or vice-versa? If you do not know who you really are, you will not function productively and you will not be happy under these challenging circumstances.

I have continually referred to the computer as another mind. Naturally, the analogy forces us to reassess both our notion of the electronic and

the biological computer--for the better, I believe. I would urge you as an artist to continually revise, redefine, and debug your biological software, just as I would exhort a programmer to always strive for the appropriate optimization of code intended to be run on an electronic mind. I would pursue my analogy even further: When faster, larger, or cheaper electronic hardware becomes available, we typically replace the oldware and re-install existing software on the new, physically superior system. If it is possible to overcome one's sense of identity with the mind, and, consequently, with one's body, then it becomes possible to view death as simply the occasion to transfer software to a new machine. One's work continues. Death does not destroy the knowledge which exists independent of any biological mind. The crucial knowledge turns out to be the knowledge of WHAT IS PERMANENT. Surprisingly, the "software" is permanent, not the "hardware".

Edited by M. Kowalski.

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