The Emperor's New Art?

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Page 95-105 "Computers in art and Design"- Siggraph '91 Art and Design Show

At the SIGGRAPH '89 conference the panel session entitled "Computer Art

—An Oxymoron?" intended to bring some members of the established art world institutions together to discuss the status of computer art. The panel's loose consensus seemed to be that theoretically, it could exist at some point, but in practice, now, there weren't very many examples of interesting work to be found. The lack of involvement with idea and content was cited. Yet some panelists, through misuse of jargon, revealed their unfamiliarity with computers and the technical milieu, and were unable to provide any clues to what this new content might be.

With each question asked after the session, the gap in understanding widened further. Audience members confused technical issues for content. Some people seemed to think that the current state of hardware and software was too primitive for real art to emerge yet. Others used the terminology of the marketplace to predict the future: Meaningless phrases such as "narrowing the gap between imagination and reality" were in abundance. Some implied that many artists' work is bound by the limitations of the prepackaged software. How can artists do much with this tool without an in-depth exploration of its language? Why do they re-render the works of other nineteenth-and-twentieth-century artists? A computer artist wondered what it would take to have his photorealistic work recognized as art, and that he would have work ready and available for critical review in the fall. None of the panelists offered their services.

There was a general feeling of dissatisfaction after the session. Artists felt that their questions were left unaddressed and that they were being written off as insignificant.

Panel members seemed unable, unwilling or embarrassed to articulate specifically just why computer art was falling short of expectation. The two factions seemed to exist in parallel worlds, unable to pass through an invisible though palpable barrier.

As a result of these events, questions arise. Has the computer art

establishment woven, promoted, and cloaked itself in some miraculous cloth—a cloak of legitimacy? Are the critics who are unable to see this cloak unfit for their jobs, as was the case for those citizens in Andersen's fairy tale, or are they like the child who declares that the Emperor is, indeed, naked?

Unfortunately, the confusion and dissatisfaction with computer art is not uncommon. Every year, visitors to computer art exhibits and animation shows voice their disappointment. Every year, the high hopes and promises we have for the technology in an artistic context fail to materialize. These aren't just the grumblings of the general public; artists, enthusiasts, and engineers alike join in mutual complaint.

Yet we hold a common belief that there is something different about using computers in the visual arts. "Radically different," "revolutionary potential, unique requirements," "transformation of space and time," and "novel medium" are the types of descriptions found in articles on computer art. Are they just the hyperbole of the marketplace? Or can computer art become a legitimate, significant member of the art world, as well as be respected for its technical achievement? If so, when can we expect this to come about? It can succeed:

When we can evaluate work fairly, using standards as high as those by which the rest of the arts are judged. When the question How did you do it? is not the only appropriate question to ask. When computer art stops imitating other art styles, and artists show a greater commitment to learning the language and concepts of computing.

The Ghetto

Early on, the mainstream "high" art world dismissed computer art as a peculiar hybrid, a carnival novelty like "spin art" or orchestrated laser shows. In response, rejected artists and engineer-artists created their own forum for theory, criticism, and exhibition of work. This forum has evolved into a community of organizations that have their own infrastructures; heros, critics, prophets, historians, public relations, conferences, awards, and publications. It should be kept in mind that that vanguard art has always had to battle recalcitrant traditional critics and a sometimes hostile public, and that alternative critics are needed. But eventual recognition of the new work is assured only if the alternative work, critical theory, and infrastructure are equal in quality to that which is being challenged.

Our situation is not unlike that of science fiction writing vis-a-vis the world of literature. To understand the comparison, consider the astute observations of the Polish science fiction author Stanislaw Lem.1 He classifies the world of the literary arts into

two groups: The Lower Realm, as exemplified by crime fiction, erotico-romance novels, science fiction, and the like, better known in the U.S.A. as "trashy books," and the Upper Realm, characterized by philosophy, poetry, and novels by writers such as Joyce,

Sartre, Bellow, and Sarraute, acknowledged to be worthy of distinction.

In the Lower Realm, science fiction exists as a "socio-culturally isolated realm" of work, a ghetto of sorts. Its publications, conferences, and exhibits exist as "junior versions," separate from those in the mainstream. Rarely does any cross-fertilization with mainstream literature take place. Writers from what he calls the Upper Realm occasionally make excursions into genres such as science fiction or crime fiction, yet still retain their reputations as respected writers. (They have already made their reputations in the cultural mainstream and are allowed such occasional lapses.) In those cases, when authors such as William Burroughs venture into the Lower Realm, they are acclaimed and congratulated as one of the "brotherhood." Due mention is given in the publications, and their presence is offered up as proof of the validity of the genre.

On the other hand "...there is no return service."[2] Science fiction writers in the Lower Realm, that is, those in the science fiction ghetto, are snubbed when they attempt to gain invitations and acceptance into the Upper Realm. (Consider the analogous situation with the SIGGRAPH panel "Computer Art: An Oxymoron?"—the mainstream critics were invited, yet provided little encouragement for computer art or invitations for artists to show in museums or galleries.) This situation naturally creates frustration for those in the Lower Realm.

Out of this frustration, separate institutions and means of sharing information are developed. Consequently, people in their own in-groups tend to evaluate and promote one another's work. Criticism is sometimes more of a public-relations affair than an objective evaluation. Promotion is used as a method of justification. This kind of promotion combined with the isolation from the Upper Realm of literature fosters the application of lower standards of judgment. Honesty compels us to recognize the science fiction ghetto's difficulties with lower standards as problems in our own group as well.

We must also recognize that the lack of high evaluation standards is partly the fault of the computer graphic marketeers who have promoted everything indiscriminately as Art. They have realized that using the arts as "softeners" and "humanizers" of the public image of computers is a powerful marketing strategy. In belief that the newest must be the best, dozens of premature efforts have been marketed as works by "great masters of a new age." And artists themselves have been heard prefac

ing discussions of their work by "This is the first known use of ... which is more appropriate to the marketing of the newest commercial product.[3] Some illustrators and image-makers of dubious talent have evolved as artistic savants. In our own short-term self interest, we have allowed this to happen.

As a result of this early over-inflation of the value of computer art, those who seek authentic vision were bound to be disappointed when they found only a few examples worth remembering. Instead of a new reality, they got the old one back, in pixels. In addition, it is now often difficult to filter out marginal work, because some of these practitioners have been long entrenched in the computer graphics establishment. One cannot fix the blame only on this establishment. Every year new artists join the cadre: Often, instead of bringing in new ideas they merely rework old images with new techniques. We need to extend beyond this isolated ghetto mentality, address broader issues, forge connections with the rest of the art world, and insist on higher standards.

How Did You Do That?

Considering computer graphics' origins in engineering, and its affiliation with science and industry, it should be no surprise that much of its imagery has evolved from the concerns of engineers, scientists, and industrialists. This also explains why often computer imagery is the visual result of the process of problem solving, or the illustration of a technique.

Computer graphics is important in scientific illustration or visualization, as a method of distilling large data sets into a format that enables visual analysis. It is essential in simulation—the process of making computer models of physical processes or natural phenomena. In mathematics, forms nonexistent in our everyday Euclidean space can be constructed and explored. New modeling techniques and photorealistic rendering algorithms have been invented to simulate the appearance of objects and scenes in the real world. In these contexts the question "How did you do it?" is perfectly valid, and a compliment to the skill of the programmer. "Is that a photograph, or is it computer generated?" is a question often asked in admiration.

Evidences of technical advances comprised a significant proportion of earlier computer art shows, with improved revisions showing up every year. Many of these advancements manifested themselves in forms familiar to us from the world of special

effects: Monsters, shiny reptilian forms, psychedelic environments, horrifying versions of the human form. Shiny spheres, checkerboards, fractals, and warped human faces show up everywhere, as technical benchmarks, as calendar pinups, and as stars of animation. Such work can be evaluated using criteria such as cleverness, complexity, and visual double-entendre. Yet, in the art world, such technical criteria have traditionally been a secondary issue at best. Thus, work like Arcimboldi's allegories of the seasons, human faces cleverly composed of tiny fruits, vegetables, and other appropriate seasonal items, or Dali's painting of Lincoln's face alternating with a lady's backside as a function of viewing distance will never attain first-rank status, and remain gimmicky technical curiosities. Furthermore, as in special effects, meaningless display of technical wizardry can be used to cover up nonexistent content. Remember the movie Howard the Duck?

These stereotypical computer images are recycled so often as to evoke laughter (or groans) from the viewers. Worried by such inbred imagery, artists have tried to point out these errors to the engineers. However, it is not easy to clearly explain the difference between artists like Arcimboldi and Leonardo da Vinci, or between illustration and art, and misunderstandings have occurred. Being more "artistic" can be misconstrued as re-rendering old masters instead of the more dubious historical pictures. Demo animations without content can be fixed by adopting stereotypical traditional animation storylines. Mathematics can be used to create sentimental, romantic landscapes. And the marketing departments of hardware and software companies are only too glad to offer it up to the public as art.

The Flip Side

Nowadays computer artists' work comprises the bulk of computer art shows, but where is the revolution? After ousting the engineers from the limelight, the successors do not always offer much additional vision, innovation, or integrity. Artists, too, mimic other art styles. Here too, computer art has many of the shortcomings of the rest of the current art scene. The advantages of imitation notwithstanding, "...work inevitably smothers itself in a receding spiral of stylistic vampirism".[4] In addition they often use tools in trivial ways. Good work is possible, and has been done, with any kind of system, but most does not live up to the inflated claims for "radical difference or new ways of seeing," although it does has novelty value. A cautionary statement from seventeen years ago still hold true: "...[a] basic dichotomy is present: on the one hand, those composers and artists who are concerned only with the act of being involved with the technology; and on the

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other hand, those who use technological means to achieve an end more relevant to the world we live in. Much of the interest in the former tends to die out as the novelty wears off [5]

Digitized, manipulated, scaled, warped, repeated, colorized photo collages abound, creating their own family of stereotype. When artists work with canned programs with limited sets of options, they are hard put to add their individuality to the result. More often what we see is appropriated imagery, clip art, instant image libraries which can be permuted endlessly, and carelessly executed "art marks" added for effect. Moreover, all this art is created with great speed. "Faster and denser"[6] might be added to the marketing belief that "newest is best." Just because one can do something fast does not mean everything should be done fast.The conclusion is that artists must act as better filters and selectors of the perpetual stream of visual media detritus.

Many images from mathematics and science are misrepresented as art. At times, artists simply appropriate the images and take them through format and color changes. Just using good design techniques and color selections does not automatically transform images into art, however. This appropriation and piggybacking on other disciplines is a bit of a cheat. On the other hand, artists and designers can be valuable partners with scientists and engineers. (This is especially true in the realm of design, when visual principles can be used for the presentation of information and data.) But computer artists can't just copy science and pass it oft as art. An idea must be assimilated, understood, and then transformed, otherwise the result can be merely bad simulacrum of science. The response to "How did you do it?" could become "But they don't even know how to do it!"

What other questions may be asked?

Misuse occurs both in the realms of engineering and art. Some images made with the latest techniques are flawless and clever, yet woefully tasteless and content-free. Some images made by people with visual sensitivity and awareness of artistic issues have nothing added to them by having been made on a computer except perhaps the value of self-consciously embracing the new electronic age. Here we get the worst of both worlds: Trivialized research and trivial art. The mutual lack of understanding between artists and engineers is a problem that still needs addressing. Artists and engineers are not yet familiar enough with one another's milieu to know what is first-rate, and what is just a hack. Yet the two groups can be a tremendous resource for one another. Through dialogue and questioning we can begin to clear up some of these misunderstandings.

We can ask other questions besides "How did you do it?" We can ask instead how the process of abstraction inherent in computing may change the basic nature of how we make art. To illustrate this point further, consider the field of experimental mathematics—the discipline created by the intersection of computer science and mathematics. Here, the act of solving problems by formulating them in computational terms has now enabled mathematicians to discover new theorems. This approach is fundamentally different than the more traditional use of computer techniques such as exhaustive searches to solve known problems (such as the four-color theorem). Will a comparable field evolve from the intersection of art and computer science?

What is significant?

We all go on in the belief that there is something about computer art that is significant. A technology that is already so integrated into so many levels of work and daily life must have implications for the arts. Yet this certain something in computer art still remains rather elusive.

At this point consider computer art that has been acknowledged to be worthy. Often-cited successful computer artists include Harold Cohen, Manfred Mohr, Larry Cuba, and Myron Krueger, to mention a few. Looking at their works, we can hardly say they are all alike. Yet their works are the result of a common fundamental premise: All of the artists have devoted a great deal of time and effort to learn how to use computers and have utilized concepts inherent in and inspired by computing. They have developed their own programs and methodologies.

Larry Cuba has used transformations and interpolations in combination with music to produce wonderful abstract studies in rhythm, thus using the computer' s ability to continuously transform objects overtime. Manfred Mohr' s exploration of structure using the computer s repetitive and spatial modeling capabilities results in the spare and elegant studies he has pursued for many years. Myron Krueger' s best-known computer-driven video installations called Videoplace allow participants' video images to interact with computer-generated "critters" and other images on a video projection screen. It is historically important as one of the first systems to explore the idea of playful human-computer interaction.

Harold Cohen has worked for nearly twenty years on an image generating expert system he calls Aaron. Pamela McCorduck, in her recent

book Aaron' s Code, has cited a number of reasons why Cohen' s and Aaron' s work is significant. Among these are Cohen' s realization that a computer program might represent knowledge that led to the act of making art,[7] that Aaron itself is a work of art that makes art, and that Aaron is a contingent system, analagous to natural systems everywhere—such as weather patterns, or even the way a human being develops "...their presence rule-based but their outcomes (or products) unpredictable."[5] And furthermore, as an example of the intersection of art and AI, "Aaron embraces, embodies, and comments upon some the central ideas of late twentieth-century intellectual ferment".9 This work is obviously more complex and thought-provoking than most of the work that has been claimed as computer art.

It becomes clear that both the computer software and resulting images or environments bear the stamp of their authors. Perhaps this is why canned programs for artists have their own look, which the artist is often fighting. By learning a programming language the artist has a chance of supplying the direction for his or her work, rather than following the trends of the marketplace. Not many artists, however, have taken the advice of the composer Dick Higgins who, in 1970, published "Computers for the Arts," a pamphlet suggesting that composers, poets, and artists should all learn a programming language as a means of access to computers. In retrospect, Higgins seems to have hit upon the obvious step to take.

Another way to look at the point is to consider how musicians, writers, and filmmakers know the languages of their respective arts. Similarly, computer artists need to be more aware of the concepts, methodologies, and consequences of computing. Only then will they be free to choose the tools they want and ignore those they find irrelevant.

Learning a computer language is not necessarily easy; it may be one of the hardest tasks at hand for the artist. And it is time consuming. But it is important to keep in mind that the work does not have to look as "perfect" as that on television—the artist is not constrained to one "correct" methodology or visual result. And finally, even if the artist never becomes an expert programmer, the knowledge gained provides perspective, and enables more congenial collaboration, if needed, with engineers and scientists.

Concepts whose origins are in the world of computing offer a wide range of ideas and influences. Among these are the modeling of

complex behaviors, modularity, languages, self-similarity, branching structures, procedural modeling, simulation, cellular automata and artificial life, the exploration of non-Euclidean spaces, expert systems and the promise of eventual AI. Each raises its own multiple issues and questions:

Only a few will be mentioned here.

Simulation, in its computational sense, is the making of computer models of physical processes or natural phenomena. These metaphorical models allow for the replication and study of phenomena which are too complex to apprehend in reality, or enable "impossible" viewings, as in the compression of time or spaces too large to normally grasp. A branch of simulation that is likely to have great effect in a number of fields is Artificial Life. According to Christopher Langton, the organizer of the Artificial Life workshops in 1987 and 1990: "...the general consensus on the "essence" of Artificial Life at the workshop was converging on the following vision: Artificial Life involves the realization of lifelike behavior on the part of man-made systems consisting of populations of semi-autonomous entities whose local interactions with one another are governed by a set of simple rules."[10] These above ideas and those of feedback and chance, of contingency, of adaptation—as with Aaron—and later, artificial evolution, will become increasingly important.

Virtual Reality, as anyone who has recently read The New York Times, The *Wall* Street Journal, The Village Voice, Esquire, The Face, or Mondo *2000* must know, is a type of interactive simulation that allows the participant to be "inside" of an artificial environment. In the most well-known scenarios, the effect of "being there" can be achieved by wearing a headset that displays the synthetic environment through tiny TVs (one for each eye) and provides sound cues. Hand motion is tracked via a "data glove." Real hand motions trigger actions in the virtual space: virtual objects may be handled, or a pointing finger can be used to propel oneself about. Multiple uses are being envisioned for virtual reality: hopefully many will be in the arts. Teresa Carpenter, in an article in the Village Voice tells us that "...my husband [Steven Levy] had reported in Rolling Stone that Eno, Peter Gabriel, and Laurie Anderson were exploring the possibilities of virtual reality for performance. The idea was this:

Each artist would construct a world where he would be joined by the other two. The audience, watching three large screens, could see what each performer was seeing."[11] Virtual Reality, once artists get access to it, may help to redefine how we experience the world.

The idea of human-machine interactivity in art raises multiple issues. In interactive systems, is the creator an artist, a programmer, an

inventor, a dungeon master, a collab- orator? Is the participant an artist, a

selector of limited options, or someone just having a good time? Do interactive systems show any real options for the participant, other than those already programmed by the system's designer? Who will control its content—from whose viewpoint will the world be presented? Is being a participant rather like being the kid who was given a coloring book to fill in, in his own style, the lines which someone else has drawn?

The idea of a free-flowing dialogue between human and machine is still mostly at the stage of a call-and-response, yet some environments like Myron Krueger's Videoplace have become more conversational. The everyday network communications mechanisms already in place that allow exchange of information all over the world are more flexible at this point, and are actually quite amazing. Networks, news groups, and electronic mail enable information flow all over the world. This communications technology is in the background; there is no conscious art to it— it just enables a channel whose content constantly ebbs and flows, depending upon the people involved. This global community of people holds ongoing conversations, exchanges programs and data, and plays in this virtual space. Additional bandwidth will undoubtedly allow for the rapid flow of images and sound. New artists' networks have already been started and may be promising as well.

The social consequences are worth noting too. Consider the danger of becoming obsessed with technique, and absorbed in computers to the exclusion of the real world—a problem that may become more prevalent with virtual reality. Consider the distance an artist puts between idea and execution. It is a tortuous and circuitous route, this maze of instructions, hardware, and code used to produce images. Why do we do it? Do we create these system so that we can finally act as gods of our own little universes? There are also issues of privacy and the control of information—urgent enough to require the creation of groups like the Electronic Frontier Foundation in response to government crackdowns on hackers.

Our classic notions of originality too may have to change. Is art in the software, the output, or a performance? What is real and what is a copy? A loss of commodity status is implied when similar yet unique images may be in abundance. Can a computer program still create originals after the artist has died?

We have embraced the technology and many of its concepts, yet we seldom manage to push our ideas far enough. Perhaps it is a symptom of

the immaturity of the discipline that we usually follow old paradigms and metaphors. What we should now be asking is What is the nature of art in our world shaped by science and technology? One way to know will be to gain more knowledge and experience of this science and technology for ourselves.

Conclusion

When will the cultural world at large become more interested in work generated by using computers? It will when computer art breaks out of its ghetto. It will when the promoters stop calling any image generated by a computer for whatever reason "Art." It will when we are more informed about different aspects of computing, algorithms, mathematics, visualization, simulation, and interactivity and how these ideas can affect our culture, instead of blindly appropriating them and passing them off, untransformed, as art. It will when we begin to learn more about our tools and the standards and issues of the rest of the art world. I am not implying that computer art should adopt the forms, ideas, and styles, of mainstream art—that would be denying its uniqueness. I refer, rather, to having an awareness of today's issues, and a comparably high set of standards for discussing work. Computer art needs criticism that is fair, objective, and uncompromising. The trash and the noise must be filtered out. Artists must stop depending on and listening to the apologists and promoters. Inflated marketing terminology won't provide true understanding or direction for computer art. Instead, let us instigate serious artistic and cultural dialogues, and engage in genuine self-reflection. "Nothing kills a legitimate movement faster than the failure to develop a principle of rigorous internal self-criticism."[12]

Some mainstream critics take computer art about as seriously as "spin art," and keep wishing it would die a similar natural death. (Yet I must say that there have been two recent articles in the mainstream art magazine Artforum. One, appearing in the October 1990 issue discussed the images of chaos theory.13 Cautionary as the review was, it was a positive step. The second, appearing in the April 1991 issue, presented the goings-on in the cyberspace frontier of virtual reality from an art critical viewpoint.)14

Perhaps computer art will be noted as an historical curiosity, like Scriabin's "color keyboards," or the allegorical paintings of Guiseppe Arcimboldi. But, I believe that rather than abating like trendy fads, computer art will gain in importance. The mainstream art-world critics should be at least wondering about the significance of its persistence. Criticism from the realm of computer art may assume more significance. This new generation may supplant members of established critical set, but let this new group also be committed to ideas and quality.

Working with computers is diffi-

cult—and time consuming. It implies a long-term commitment, a desire to learn the tools well, and leaving the expectation of instant art behind.