

1.2 Hype, Hope and Cyberspace -or- Paradigms Lost

pedagogical problems at the digital frontier

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A number of critical issues and problems have evolved over the past 20 years as computers have been introduced into the art and design curriculum. This essay compares the pragmatic demands of tool usage and the metaphorical emulation of traditional media with the need for examination of fundamental issues.

Introduction

INTERFACES - Art and Technology (Griffith Artworks 1994) is an art exhibition that is touring rural Queensland during 1994. It includes 20 works by 18 artists that have been selected from the permanent collection of Griffith University in Brisbane and organised by Griffith Artworks. Typical venues in the rural towns it is travelling to include libraries and RSL (Returned Servicemen's League) Clubs. In each town local schools are encouraged to visit the show and participate in accompanying workshops.

It would be easy for the urbanite to see this as an attempt to take both high culture and high technology to deprived outback communities. In fact the truth is quite different. Rural communities in the vast distances of inland Australia have become adept users of technology and their adaptation overshadows the accomplishments of their urban relatives.

In her catalogue introduction (Bonnin 1994) Dr Margriet Bonnin, the Director of Griffith Artworks begins: *The inspiration for INTERFACES came from a group of women whom I met in Longreach in 1990. Everyone at the meeting had travelled a considerable distance to get there. Some by air, and others by four-hour car journeys. Our meeting was about arts funding, but our conversation centred around the potential for new technologies to impact on isolation and on creativity. We joked about the hazards of teleconferences, "electronic funds transfer" bankcards, paging devices, and answering machines. We discussed brands of satellite dish and mobile telephone, speculated on the artistic applications for home computers, video cameras and television open learning, and promised to swap recipes via fax.*

Kim Mahood, in her accompanying essay (Mahood 1994), describes another rural perspective: *Some years ago I visited friends who managed a remote Territory cattle station. It was in the harsh red scrub country south of Tennant Creek, and inside the cavernous corrugated iron interior of an ex US army shed, the station children watched videos (they couldn't get direct TV reception) of out-of-sequence episodes of The East Enders. More recently I visited the same family, now managing the cattle operation of an Aboriginal mission in the southern Kimberleys. In a moonscape of mesas and salt lakes, three TV channels were now available. As I drove up I was greeted with the sight of a TV set in the yard beside a campfire, and a group of Aborigines watching The Simpsons, while the sun dropped in*

spectacular fashion behind an iconic outback setting of stockyards, windmill and flat-topped red hills. The local Aboriginal culture is still strongly traditional, and it seemed to me that a very curious form of cultural hybridisation was taking place.

The individual pieces in INTERFACES span 20 years. Here one of the earliest is described by the shows curator, Beth Jackson (Jackson 1994):

*What are the limits of technology? Many people, for many different reasons, refuse the "benefits" of technology - refusal of medical treatment, refusal to own a television, or, in the case of Mervyn Bishop's artwork, a refusal to allow photographing of Aboriginal sacred sites. What is interesting about **Warning sign, 30km from Maningrida, NT, 1974** is that Mervyn Bishop is himself an Aboriginal photographer, ironically photographing a sign which says "do not take picture with camera...". Perhaps in refusing technology, or placing limits upon it, we are denying ourselves certain types of experiences and information. However, this artwork reminds us that there are other experiences and types of knowledge which technology supplants.*

During the last month I have been involved with converting the INTERFACES catalogue for the internet using the World_Wide_Web (WWW) format. It should be publicly available later in 1994 (Brown 1994 b.). Soon after it is hoped to include online documentation of the many workshops held in collaboration with the tour.

Australia is a country that's almost as big as the USA but its population, by sharp contrast, is smaller than the Bay Area. It is also geographically isolated and a return trip to Europe or the USA took weeks of travelling until the relatively recent advent of cheap air transport. It's therefore not too surprising that technology, and in particular communication and information technology have been so readily adopted. Nor that some of the leading international practitioners in the world of art and technology are Australian.

I recently completed a two-year visiting professorship at Mississippi State University in the USA. Mississippi is the poorest state in the nation and, in consequence, has significant problems in its secondary education sector. Students entering University to study art, science or engineering often have no prior knowledge of basic subjects. During late 1994 it is hoped to connect all Mississippi's High Schools to the seven State University campuses via a wide area network. University professors are already proposing to deliver coursework and receive assignments via the internet (Trotter 1993). Apple, in collaboration with San Francisco's Exploratorium, have experimented with similar outreach models.

In Europe and North America it's common to hear these kind of moves towards "Open Learning" and "Virtual Classrooms" as futuristic applications of "leading edge" technology. In Australia this development is more likely to be perceived as just another step along an established path: the legacy of post colonial institutions like "The School of the Air" and "Flying Art School" and of the ancient indexical systems that document native Aboriginal history and tradition like the Songlines and the Dreamtime.

This pragmatism coupled with the dislike for rhetoric that symbolises the Australian national character has enabled a valuable and critical approach to new media. Although UK commentators like Feldman (Feldman 1991) describe clear economic benefits of electronic delivery of training and information several Australian researchers have been critical of the effectiveness of such methods (for example Lowe 1994).

Similarly in the UK Dr. James Alty has questioned the validity of models which, because of their complexity and their nature as simulacra, distance their users from the "actual" events. His examples concerned process control instrumentation in high-risk environments (like nuclear processing plants). It can be difficult, if at all possible, to determine the verisimilitude of the model and the first sign that it has failed may be after significant damage has been done. Alty has described this disturbing problem as "the proxy effect" (Alty 1993).

I have now spent twenty years using new technology as a practicing artist and fifteen years attempting to teach others about the potential of this exciting new multifaceted medium that Alan Kay called the metamedium (Kay 1984). Now, more than ever, I am concerned about a number of issues that I hope to index, if not significantly discuss in the remainder of this essay. Readers will soon appreciate that I write from a Modernist perspective. Although I willingly reject the utopianism of Modernism I nevertheless believe absolutely that all materials have an intrinsic and immutable nature. The fools errand that has obsessed my mature life has been the search for the intrinsic nature of chameleon-like computer systems.

Tools usage and skill -v- fundamental knowledge

Since the early 80's the development of discipline specific application packages and object-oriented or "user friendly" computer interfaces has created whole new markets for computer products. This development has had many positive effects: computer hardware and software are now cheap and affordable; productivity in many areas has been significantly enhanced and; user confidence is high - many people who would have previously felt intimidated by computer systems are now using them on a regular basis.

On the negative side we can see that this broadening of the computer franchise (which can be argued as a democratising of the processes) has been achieved at a considerable cost. By disguising general purpose, multi-faceted computer engines as application specific tools the comprehension of the user has been limited. The increasing use of metaphor in the computer human (multimedia) interface is symptomatic of this problem. To quote Tom Defanti (Defanti 1988) ... "there are too many people who think that computers are nothing more than hyped up 3 by 5 index cards".

The users of most proprietary graphics application packages are subject to the limitations of that package and, in particular, the perception of the package developers regarding the needs of the client group they are serving (or think they are serving). The naive user often believes that limitations within these packages are symptomatic of the computer metamedium as a whole.

The commercial need to sell computer systems and software has driven these developments. Most are designed to simulate existing discipline specific technologies. Because such packages accurately emulate traditional media they are marketed as "easy to learn" precisely because they don't challenge the user with new ideas and principles.

To my mind this is a dangerous precedent. Human intellectual development can be seen as a series of responses to challenges. The challenge of the photochemical process eventually created the aesthetic and language of photography. The introduction of the extremely difficult to use systems of electromagnetic image recording in the 1940's and 50's created the modern wonderland of video. Would these new and unique aesthetics have evolved if the technology had been given a "user friendly" console that emulated then existing production methods? I doubt it and believe that we are creating computer-based tools that threaten to ossify current practice and prejudice. Also the constant (ab)use of metaphor leads inevitably to the cliché ridden work typical of much "post-modern" television and print design.

Also, and perhaps even more worrying, these specific and limited application tools actually disguise, often inhibit and sometimes actually restrict the exploration of the unique potential of the metamedium. Not only are users cajoled into thinking the computer is something it isn't but also they are actively prevented from finding out what it may really be! This is a significant ethical problem that requires attention.

Unfortunately the urgent need for change in attitude is hampered by many current practices, attitudes and interest groups. Many people don't even see my concerns as a problem and some even think I am creating an unnecessary and potentially subversive dialogue. A typical comment is ... "you don't need to know what's beneath the hood in order to drive a car".

Academics who teach the next generation of system developers and users are hampered by their own conservatism, their own addiction to the user-friendly paradigm and their lack of appreciation of "significant" issues. Employers promote the recent productivity gains of specific-purpose computer solutions and their recruitment practises force educational institutions to adopt specific training programs rather than general purpose knowledge development. One program I was involved with has now converted into a specific skilling course that can almost guarantee the committed student employment in the film industry. The curriculum excludes investigation of fundamental theory, human and social issues or any other material that would promote more knowledge and understanding.

Sadly, in the USA at least, students themselves are now resorting to legal action against their teachers and schools if they do not receive pragmatic training that ensures specific employment potentials.

The internet and beyond

If it is difficult to contextualise a "simple" computer graphics package how then can we begin to address the immense potential of the "global library" of the internet. Without doubt access to information is one of the foundations of

democracy and the internet and proposed Information Superhighways will enable access to an inconceivable range of information and services. Already niche interest groups connect like minded people across the world.

Problems are also rampant here. Cultural imperialism, both in intended and unintended forms, is a very real threat particularly, but not exclusively, to developing nations whose cultural autonomy is already undermined. The USA's Clinton administration have already attempted a "take over" of the internet via the enforcement of mandatory US-controlled encryption "Clipper" technology. The example of the GATT negotiations has alerted many to the potential for "hollywoodisation" and the further export of American culture with its inherent parochialism and obsession with violence.

The internet though, at least in its current form, is very much a user driven phenomenon that remains unaffected by the kind of commercial pressures that underlie many of the problems outlined in the previous section. Its primary existence is to put people in touch with other people. Many of these users are aware of their responsibilities as inhabitants and have been active in preventing abuse (an example is their contribution to the successful overthrow of the "Clipper" encryption legislation).

The 'Net is already a global work space for many and with improved bandwidth and compression technologies will offer new potentials. Carl Loeffler (Loeffler 1993), who works between Carnegie Mellon and the University of Oslo has demonstrated networked virtual reality environments where participants from remote geographic locations share the same virtual environment.

On a more mundane, though hopefully no less effective, level I will soon be teaching a class at the Memphis School of Art in Tennessee from a desk in Brisbane, Australia using email and irc (internet relay chat - which enables realtime, text-based group conferencing sessions). William Mitchell, Dean of Architecture at MIT recently described a virtual studio project (Mitchell 1994) that linked MIT and Hong Kong. Students are now regularly contacting mentors that they, and not their teachers, have selected and the quantity and quality of specialist "conferences" or listserv channels on the network is growing constantly.

Digital networks allows Universities to outreach to high schools, libraries and museums and improve the potential for inter-institutional collaboration. The sharing of expensive facilities like supercomputers is now common. Anyone who followed the recent impact of the Schumaker-Levy comet fragments with Jupiter witnessed an amazing digital collaboration which spanned the globe and synchronised planetary rotation of both Earth and the distant gas giant. The images that resulted were made available within hours if not minutes via new network publishing facilities.

The World_Wide_Web (WWW) and "graphic" browsers like NCSA's Mosaic, enable good looking, well formatted text with full colour images, video and sound as well as full hyperlinking to any other www document. It has opened up many more opportunities and generated an unprecedented explosion in growth. Many academics now publish on the 'net and overcome the long delays associated with journal publishing. Academia and the publishing houses lag behind. 'Net publishing still does not

qualify for tenure points at most US Universities and publishers discuss copyright and access whilst their subscribers and authors set up and access alternative services via the network.

David Sless, director and co-founder of the Communication Research Institute of Australia (CRIA) has described the current state of the internet as ... "the Garden of Eden" period (Sless 1994). Academics (Sless' "information junkies") stroll the virtual pastures, eating from the tree of knowledge and develop a healthy appetite and addiction. Soon, he warns, higher authorities will reclaim their territory.

The Internet is a self-financing, not for profit, philanthropic and primarily academic and research network. No one seriously doubts that some, if not all, of its functions and facilities will be consumed by commercial interests. Around the industrial world telcoms and other lobby groups are pressuring for greater control of internet traffic. Elsewhere (Brown 1994 a.) I have argued the need to preserve public access to these important facilities.

The place of design within broader academic institutions

It's my experience that visual arts and design disciplines are finding renewed credibility within many institutions. Just a few years ago these faculties and areas were often perceived as wasteful luxuries by many of the science and engineering community. Now, with computer visualisation, network publishing and multimedia in demand the visual professional has become a valued collaborator. The potential for real, in-depth and cross-disciplinary collaboration is profound but I'm concerned that this promise rarely meets expectation.

All too often I find that artists and designers are brought in after all the "real work" has been done to "decorate" the experimental results and make them look pretty. The alternative, where artist and scientist work together from the start, each contributing specialist expertise and simultaneously acquiring an awareness of each others languages and context, is more difficult to achieve and rarely practised. The result is scientific data: graphs, visualisation and animations that are cliché ridden and decorative at best and dangerously misleading at worst.

Edward Tufte, author of two of the canonical textbooks of information design (Tufte 1983, 1990), has published a short pamphlet (Tufte 1992) that demonstrates how graphic misrepresentation disguised the dangers of launching the Challenger Space Shuttle. He illustrates how the graph could have been drawn and it becomes immediately obvious to even a naive onlooker that the launch was attempted at temperatures so low that disaster was almost guaranteed. The implication is simple: people who create "empirical" visuals need to comprehend the data they are manipulating - and/or- people who create the data need to be more visually literate. It has been my ambition for some time to design a course that can simultaneously address both of these needs (as well as issues like those above) but I have been unable to discover a sympathetic environment. Although I believe the issues to be both practical and specific I have been most often accused of being either a theorist (who needs theory anyway...), an idealist (let's just get on with the job, these tools work, why create problems) and most recently, whilst in the USA, too European (whatever that may mean!).

Conclusion: an increased need for visual literacy

In today's hypermediated, telecommunications-based economy there is an increased need for visual literacy. Educationalists suggest that the gradual decline in high school grade averages is not due to a fall in literacy or achievement but rather that it is an artefact of a measuring system based on outdated criteria. Their model is a child who consistently achieves high scores using complex computer games but regularly fails to achieve academic success. The child clearly exhibits a high IQ, fast reactions and excellent eye-hand coordination. An education system that fails to offer such children the challenge they desire must be revised.

In general the opportunities for the art and design education sector, given that it can respond fast enough to both the challenge of new technology and the demands of a cross-disciplinary marketplace appear excellent. The broad-based need for visual literacy can be addressed in a number of formats: service teaching; short courses; outreach; computer assisted learning and so forth. There's also a need to re-establish visual literacy as a core subject in both primary and secondary education.

In catering to these demands the discipline can weld new allegiances and consolidate powerful positions in the academic hierarchy that would have been inconceivable just a few years ago. New sources of income, from outreach and research, should become available.

All of this calls for a profound shift in self image and this, more than any other factor will limit achievement. The problems of motivating academics who have been worn down by lack of appreciation and the years of marginalisation of their discipline are considerable.

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