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INTRODUCTION

< This Issue >

I am happy to be able to feature an in-depth perspective from David Blair ("WAX or the discovery of television among the bees") in this issue of Leonardo Electronic Almanac. In "Metavirtue and subreality" he explores metafiction, ethics and mode changes in a range of cyberplaces from Disneyland and Jurassic Park through Firesign Theatre to SIGGRAPH. Stephen Pope provides an installment of his Editor's Notes for the "Computer Music Journal" in "Why is Good Electroacoustic music So Good? Why is Bad Electroacoustic music So Bad?". LEA readers are invited to comment on the editorial topic for publication in a forthcoming issue of CMJ. A compilation of media art center and project profiles, announcements of upcoming events, and some new publication projects complete the issue.

Next month (LEA 2:5) Roger Malina will be LEA Guest Editor, along with his review and editorial crew. The issue will include another installment of Leonardo Digital Reviews, and an edition of Space Art News. As always, I invite submissions from LEA readers for publication in future issues of the journal.

As media arts resources proliferate on the internet, disparity in technological access and the time factor to peruse the net continue to be important editorial considerations. LEA reader comments and reports from a variety of net users reinforce the need to provide a distributed publication with deep, self-contained content and an editorial focus. This, in addition to pointers to material on ftp sites and available network resources, offers the most effective balance of information to the most people, given the current state of the network. We are continuing our plans to develop in the realm of the World Wide Web and multimedia presentation resources. We hope to have news about these developments in the near future.

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FEATURE ARTICLES

< Metavirtue and subreality >

or

"The involuntary walker as virtuous subject yet only semi-intelligent agent"

or

"Birds or No-ledge to stand on"

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1 Disneyland

It's 9:45 PM, and I'm walking through New Orleans Square at

Disneyland-Anaheim. The water show is in full swing, with miraculous sudden set changes... the giant pirate boat with 50 actors has turned and completely hidden behind a corner too small for it, and multiple 30-foot evil magic-mirror faces hang on mist screens above the water. I decide to take a sudden turn myself, to visit the Pirates of the Caribbean ride. A few feet down the path, the crowd is gone, and the water show almost inaudible. The ride is a narrow water way with flat bottom boats inexorably driven forwards through the artificial landscape by a fearsome chain and gear mechanism hidden by the water. I'm in my seat, and 20 seconds later we are underground, on a river in a cave system somewhere beneath Disneyland, somewhere in the Caribbean, probably near the storage space of that missing water-show pirate ship. And, simultaneous with all this, I am almost back in the Carlsbad Caverns National Monument, true wonder of the underworld, alone, after midnight, during the production of my film "WAX or the discovery of television among the bees". Floating on a boat attached by bottom chains to an artificial underground Disney-Caribbean river is not that much different from walking alone, at midnight, through the unbelievable underground and path-determined space of Carlsbad Caverns, moving in half-light among giant rock forms. That afternoon, deeper in the cave, I'd had a beekeeper's suit on and been standing around the corner of the one-way path from a cameraman, almost leaning on a fractionally detailed limestone formation. On the cameraman's cue, I was supposed to suddenly create a material wipe by walking around the corner, but we had to keep delaying the shot as tourists kept appearing behind me on the one-way path... surprising me, but not themselves. I was just part of the landscape, and several even said: "The Moon, huh?", before turning the next corner and finding the camera. I was part of their ride, but they knew I was also a thousand feet underneath the moon, maybe somewhere in France on the set of a Melies movie, or perhaps back at Disneyland, back at Pirates of the Caribbean.

An interesting and vital part of navigation in immersive environments is the effect of sudden mode change.... often, turning a corner, you are instantly in another environment, as if you had just passed through the spatial equivalent of a soft-edged wipe. What is shocking is that these mode changes can often take you to an environment which contradicts the one you just came from, both in appearance, and in meaning and use... like turning a smooth corner at the base of the Matterhorn at Disneyland, and ending up at the end of a row of urinals.

The first effect of this spatial mode change, I believe, is that one becomes more susceptible to association. In other words, free navigation in an immersive environment leads to mode changes, and mode changes lead to an increase in association. .. sometimes internal, and sometimes external. The latter we call coincidence.

Back in the early 1970's, I learned a lot from surreal audio theatre pieces put out by the group "Firesign Theatre". I hadn't listened to them for almost twenty years until I bought them as used records, in preparation for a trip to SIGGRAPH '93. Off the plane under the memorial statue at the John Wayne Airport in Orange County, in an enormous surrounding glass abutment that was the symmetric center of a high imperial Post-Modern building so obviously built first in the computer that regular holes had been designed in the mold of the parking garage's poured roof to allow what started as elephant feet underground to turn into a grid of optimistic palm trees above... I realized I'd better go to

Disneyland before I got too busy. Four hours later, it was closing time at Disneyland, and I was emerging from the bathroom across from the Matterhorn. I'd just bought my first Walkman the month before, and wasn't used to the dual alienation and audio overlay effect you get from a Walkman, so I put the headphones on again with self-conscious semi-reluctance, and went back to "We're all Bozo's on this Bus" (Firesign Theatre, 1971), written at the beginning of the age of Video as an imagination of what government-inflicted simulation might really be like. Putting the story briefly, a bus comes to town, and Clem gets on board. It turns out that the bus is actually a seamless VR environment, that may or may not take Clem to a future amusement park very similar to what I imagine is Ross Perot's vision of the Data Superhighway. While meeting the audioanimatronic President on the White House Ride, Clem reveals himself as a quasi-revolutionary hacker, who conversationally forces the robot president into maintenance mode, in order to talk to Dr. Memory, the real program running the simulation. Clem is inside the machine and inside the program, calling out to Dr. Memory: "Read me, Dr. Memory! Read -me- Dr. Memory!". There's a full moon out, the Matterhorn is white, and the gondola cables are dark and visible against the sky. Suddenly, there's an additional voice and space on the tape, which it takes about ten seconds to identify as coming from the entire southern slope of the Matterhorn, which has begun to speak in the sublime voice of a woman on a microphone saying: "Shutting Down System A. Shutting Down System A. Check. Shutting Down System B. Check." A male voice conversationally replies to the technical woman from another set of speakers across the way. In the meantime, Clem, who had already succeeded in breaking the President, has just shut down the entire Future Fair.

The effect of modal change and association, whether the latter takes place in the imagination, or in the world as coincidence, is that you end up with at a sort of spatial fiction, what Jay Bolter in his book on electronic writing called a topical, or topographic fiction... a fiction of aphorisms and situations, spread in front of you as a field of places that can change one to the other in a variety of ways. Traveling through the fiction is like navigating through an immersive environment, and vice versa.

2 haptic dimensions

Navigation through immersive environments is of course a serious problem in the world, an enjoyable problem in amusement parks, and a highly rhetoricized one in virtual worlds. Already, in an amusement park, we are often already on the verge of fiction making. By the time we get to virtual reality, we find ourselves in the midst of a full blown metafiction.

Metafictions have been described as fictions that examine the creation of systems, especially themselves and other fictions, with particular attention to the ways in which these systems transform and filter reality. There is an assumption in this sort of fiction-making that we are locked in a world we have created, a fictional world shaped by narrative and subjective forms developed to generate meaning and stabilize our perceptions. Metafictions don't operate on aesthetic assumptions of verisimilitude, but exult in their own fictitiousness. They assume that there are no true descriptions in fiction, only constructions, which may not have any relation to the world.

Navigation in virtual worlds tends to disrupt the ordinary balance

that exists between our exterior senses and our interpretive subjectivity. It is no accident that VR has been compared with hallucinogens. LSD, as well as alcohol, fatigue, and lucid dreaming, have already provided us with many examples of this disruption, all tending to reveal what I would call the haptic dimensions of thought... a sudden intuition of the material nature of thought, of how thought is received from the environment, and at the same time transforms the environment. Acid trips, as example, are famous for their mode changes, sudden and powerful associations, and constant commentary upon themselves, a unified meta-fictional experience that often leaves the user with the powerful impression that thought is literally another and different physical sense.

Of course, the same effect is common to exhaustion in immersive environments. After the Matterhorn spoke through speakers, I made the very long walk back to my hotel across the famous and vast parking lot, past the gate and down a long street with a new sidewalk which changed side of street every block, and width more often. Four hours off the plane, with miniature golf to one side, the Charismatic Convention Center to the other, and naked power pylons above, I was waiting for the next epiphany, as I could barely tell the difference between Disneyland and California. I received my epiphany as the appearance of a small rectangular concrete cover embedded in, and same color as the sidewalk. On the molded top there was indented the word "telephone", which in the tunnel of my exhaustion made me think too clearly about the lines invisible under the over-lit night street, about my telephone at home, barely lit and unseen by my wife, who was certainly asleep in another room; about the last phone I used to call her, a payphone back at Disneyland... in general, about both the limits of my knowledge, and the connectiveness of words, my thoughts, and the world... and how, in making those connections, my thoughts had acted like a strange sense, seeing things so far away, or impossible to see.

I believe this is related to something the mathematician Poincare said when describing his theory of conventionalism, the main purpose of which was to assert that the space described by the convention of Euclid's theorems did not rule out other spaces with their own self-consistent sets of rules. In certain descriptions of space, he said, there could also be haptic dimensions... where every muscle was a dimension.

This thought fascinated people at the turn of the century, and was related by them to the notion that the 4th dimension was an alternate spatial dimension, at right angles to everything we know. In many ways, these enthusiasms were parts of an attempt to deal with subjectivity as a dimension and as a sense.. an n-dimensional sense, since with so many possible descriptions, there was no point in stopping the count.

Nowadays, with human/computer interface technology, we have come to a literalization of the idea of haptic dimensions. Now, the world can be mapped to muscles, so that a small hand gesture inside a Dataglove can be used to navigate, or even to increase the amount of space available in a virtual world.

Speaking about the human/computer interface in his book "Virtual Reality", Howard Rheingold says:

"We build models of the world inside our head, using the data from

sense organs and the information processing capacity of our brain. We habitually think of the world we see as out there, but what we are really seeing is a mental model, a perceptual simulation that only exists in the brain. That simulation capability is where human minds and digital computers share a potential for synergy."

I find it fascinating that Rheingold is not just a great popularizer of VR... he is also a popularizer of lucid dreaming technologies.... which allow a dreamer literally paralyzed by sleep to communicate information from a parallel, artificial and autonomous world out to sleep researchers, using a Morse code of eye-wiggles. I take it as a clue that our equivalent of the turn of the century fascination with haptic and higher dimensions can nowadays be found in the theme of potentially autonomous alternate worlds, that exist in machines as virtual reality and artificial life, or in our world, as Jurassic Park, and which share among themselves the qualities of metafiction.

3 meta JP

In North America, we were already immersed and navigating within Jurassic Park. Of course, Jurassic Park, The Film, is only a single interstice within an immersive, navigable environment made up of the various media that Jurassic Park, the Concept, is presented in.... ranging from wearable tee-shirts, and wrappings for burgers at McDonalds, to many of the booths at SIGGRAPH, and beyond that to future theme park rides. Metafictional elements are the audiences' navigation within this environment... from product to product, from place to place... best emblemized by the film audience's common smile at the only really visible product placement in the entire film: the Jurassic Park memorabilia that can be seen on screen in the Jurassic Park gift shop. Given the fact that the film is part of an immersive environment, this moment is more than an advertisement for itself... it is a metafiction emblem of navigation, modal change, and potential association, in the same sense as given back at the Pirates of the Caribbean, though designed for a more limited and practical effect... to sell you tee-shirts, or whatever you might want when you decide you want it.

Navigation is an important theme within the film. Richard Attenborough, famous film director in our world, stars as the concept and money-man behind Jurassic Park, a world within our world where dinosaurs live again. He transports our main characters to the island in the bellies of helicopters, to see and approve the mystery of his creation. First stop, after a brief witnessing of this creation, is the island's museum movie theatre. There everyone is treated to a film within the film, in which Attenborough clones himself to introduce us to the idea of reproduction without sex. Suddenly the movie theatre becomes a theme park ride. Restraining bars come down over the seat-bound, a wall opens, and, diorama-style, a living laboratory behind a plate glass wall begin to scroll past the riders; dinosaur-reproduction workers are visible inside the laboratory. The lawyer-character whispers to Richard Attenborough: how marvelous, it's all so realistic... are those auto-erotica? Attenborough replies: no, we have no animatronics here. They're real! It is at this moment that the three scientist characters, so taken by this completely immersive environment... there is no question of real or unreal for them!... decide that they have to navigate. Communally, they force up the restraining bars, and exit the ride... cybernetic sailors on this narrative's oceanic pond!

If you've ever seen *Blazing Saddles* by Mel Brooks, you'll remember the famous horse chase, whose climax is a sudden modal change, where the chase crashes through a painted landscape backdrop, and finds itself backstage... with no loss of momentum, the riders continue on to the next set, where they disrupt a Busby Berkeley style movie in mid-production. That's how I tend to view the scientist's jump off the ride, as well as the famous scene when the autonomous and artificial *Tyrannosaurus Rex* crashes through the Park's unelectric fence at the beginning of the film's recorded disaster.

Of course, by that point in *Jurassic Park*, the associative process is already in overdrive. For instance, what are the dinosaurs? Before seeing them, most people already know that they are this age's miracle of computer-generated pseudo-autonomous entertainment reality. In the film, we also learn they are earth-buried bone that can be made visible aboveground in the middle of the Badlands of South Dakota through the use of shock waves generated by elephant-gun shells, which create echoes that can be written to computer screens as image-processed pictures. They are DNA held invisible within mosquitoes doubly hidden within miraculous transparent amber buried deep in the earth, which yet can be dug up, extracted, and revealed as equivalent to the wall to wall scrolling alphabetic texture that covers the cinema screen in the movie within the movie at the *Jurassic Park* Museum... DNA letters actually generated during the dinosaur's fateful afterdeath mating with frogs that can change their own sex. I can't even begin to go into the number of descriptive associations this film can generate... to my mind, it is one of the great associative narratives, a truly atemporal, or should I say spatialized film.

4 SGI

Which brings us to *Jurassic Park*, the potential virtual reality. Several weeks after seeing the movie, two days after Disneyland, I found myself at Discovery Park, part of the Silicon Graphics booth at SIGGRAPH '93. It was here I had a chance to reconsider what I had thought to be one of the most sublime elements of the film... the overarching, fractionally dimensional and ultimately recursive theme best expressed by the main scientist in the phrase: "you'll never look at birds the same way again."

If I remember correctly... at the beginning of the film, we're in the Badlands with the main scientists, digging fossils. The shotgun shell has gone off, revealing the subterranean velociraptor skeleton on their outdoor but not particularly mobile computer screen. In the midst of a violently imaginative fleshing out of the dinosaur bones' previous body and behavior, the scientist says "You'll never look at birds the same way again". This phrase, stranger than it seems, and well aware of it's effect, echoes through the film in hundreds of ways... becoming, as if by default, a main theme. Moments after the fatal pronouncement, Richard Attenborough arrives by helicopter to take them to *Jurassic Park*, where it is their job to judge whether this high entertainment concept can fit in our world. The park implodes, the dinosaurs riot, and the scientists barely escape... but they do, in the belly of a helicopter. At the film's wordless end, the main scientist looks through the clear window, or dead eye, of his artificial bird, and finds what appears to be the sublime in the image of a pelican winding its wings over the ocean

beneath him, which, except for an exterior shot of the helicopter in flight, is pretty much the last shot in the film. Despite all the emotion on his face and in the sound track, I have to say that I really don't know what it is the scientist sees, but it certainly is a bird.

At SIGGRAPH, the day before I actually did find my way to SGI's "Discovery Park", I was standing two halls away in line at The Virtual Reality Laboratory, part of a VR museum ride created for an exhibit called "Imaging, the Tools of Science" to be installed at the Chicago Museum of Science and Industry. The visual interface was the Fakespace Boom 2C, a boom-suspended periscope-style cube with a high resolution stereoscopic display inside... more vividly, something like a large, swivelable, realtime Viewmaster at the end of a very fancy articulating lamp-stand. Virtual Reality Lab was essentially a fly-ride through several surreal and constructed worlds. First you found yourself in a bare, circular room, with your pre-grabbed portrait on the wall, and a polygonally crude Fakespace Boom 2C recursively in front of you. Back in the real world, with the real boom, you could swivel around and look at the room, all the while inexorably advancing toward your portrait, which, at a certain distance, shivered into fragments that flocked together and flew through the hole left by their disassembly. You had to follow them, through the hole, to find yourself floating in the clouds. The birds that were you departed ahead and above. To the side was a girder-thick red wireframe cow, a sort of surrogate cloud, and directly ahead was a structure that once again you were inexorably heading towards and then through, a sort of open ended floating skyhouse made of 4 circuit boards in extreme perspective, and a fifth right ahead. The moment before colliding with the fatal frontal board, you could see the image of a flower, and by the miracle of modal change, you found that you had passed through to emerge out of a patch of flowers in the center of a park, a main natural space in a Potemkin city made of texture-map flats.

This, seen from the particular angle chosen by the FakeSpace user, was all projected on a video screen behind the person standing with his head up to the swiveling box. I didn't actually get to put my head up to the box that day, as the line was quite long. Time is always a consideration at SIGGRAPH, and since I didn't have a watch, I turned around to ask the fellow behind me what time it was. Before he started to speak I could see he didn't have a watch, and so I stopped in mid sentence, just as he started to say something that I couldn't hear. Being polite, I said "What?" and he said "Right now", so I said "What?" and he said, "You asked me what time it was, and I said it's right now". I agreed.

Twenty six hours later, just before finally getting to Silicon Graphics' "Discovery World", I found myself waiting in line to pay for my lunch at the International Food Court. Again I needed to know what time it was, so I turned around and asked the person behind me. I recognized it was the same fellow just before he inevitably said "I said, it's right now, don't you remember?", surprising both of us, as it had been estimated there were 10,000 other people with us in the Anaheim convention center. So, to be polite, as we obviously had something in common, I read his tee-shirt, which said "The Virtual Museum", and asked "What's the Virtual Museum?". He didn't really want to answer, and I didn't really find out until the next day, when I came across the actual Virtual Museum, back in Machine Culture, as the art show was known during this SIGGRAPH year. The Virtual Museum being sort of a

common interface for inexpensive, individually created virtual worlds, a sort of museum atrium through which one could enter, under arches, any compatible virtual world module you might pick up from the Internet, or a floppy disk. The Virtual Museum describes itself as therefore allowing anyone to explore ancient Egypt, pre-Columbian Peru, and Atlantis. None of this information being offered by my space-time companion at the International Food Court, I decided to push the situation, so I read his convention badge, which always has name and job function printed on it at SIGGRAPH... apparently he worked for a company called Earth. So I asked, "What's Earth?", and he said "That's where I live".

After that and lunch, I was off to "Discovery Park", where the line was too long, so I talked my way in the back door. "Discovery Park is an Interactive Entertainment and Virtual Reality Experience!" was written on the brochure, and inside, there were birds.

First was a pterodactyl-shaped, user-mountable ride, where a canyon environment appeared on 3 large hi-definition screens ahead of the person who steered the flying machine from it's virtual back, with wing tips and pterodactyl-head visible occasionally. Everyone in the room could see the screens, and there was a bit of ambiguity whether or not the rider was actually the bird having an out-of-body experience, with the annoyed bird-body continuously attempting to catch the eye of the floating oversoul. Networked to this was the private, 2 million pixel Fakespace Boom 3C, which apparently allowed you to look around while the pterodactyl-person did the steering through the inevitably progressing air. Noone else could see what the person at the Fakespace boom saw. Third node on the network was yet another viewpoint, embodied in a high resolution and also resolutely private head-mounted display from Kaiser Electro-Optics.

People were also looking at birds differently in the Evans and Sutherland booth, which had SIGGRAPH's other user-mountable flying demo ride, a sort of Sports Simulation Gym where your body was a hang-glider space ship in an extraordinarily complex and enclosed high-definition city space. In the Reagan/Bush years, we would have immediately thought of the military as the buyer or maker of such flying rides, as well as flying things, and uncontrollable carnivores. But now is the time when we instead remember that Link, inventor of the flight simulator, came to that device from his work designing rides for amusement parks.

Link's flight simulator took the roller coaster off the ground using pneumatic motion, making the rider into a bird in a box. Before computer graphics could match the realism of that motion, miniature landscapes were built, reconstructions of appropriate countrysides, which the flight-simulator pilot could see through a motion-controlled camera that floated on a grid above the model board. In this time before computer graphics, many people identified visual simulation with such physical miniatures, so that there it was no great associative leap from the model board to Disneyland. Of course, at that time, one of the logical associative paths leading out of Disneyland was the idea of government-inflicted simulation, presented "In Technical Stimulation", as the Firesign Theatre put it. And certainly, visiting Anaheim's ancient Disneyland, it is very easy to arrive at an idea of the intimate linkage of entertainment and death, especially in New Orleans Square, where Pirates of the Caribbean begins, after establishing the cave, with skeletal pirates

guarding gold, then proceeds through torture and rape to end with an ecstatically drunken pistol duel held in a gunpowder storage cellar.

In Jurassic Park, the one skeptical scientist hears Richard Attenborough say that a mechanized tour of Jurassic Park is as safe as any amusement park ride, and in response volunteers: "But on the Pirates of the Caribbean, if the Pirates get loose, they don't eat the tourists". So what should we see when we look at birds flying free as a tyrannosaurus rex through the air?

In "WAX or the discovery of television among the bees", Jacob Maker works on a simple, local network of flight simulators, a 1983 precursor to what in 1986 or so became SIMNET, a wide area simulation networking scheme that allowed a group of pilots sitting in flight simulators somewhere in Tennessee to train with people driving tank simulators in California, all together in the same limited, synthetic environment. This sort of networked simulation prepared the way for the raid on Libya, the invasion of Panama, and ultimately for the Gulf War. The proposed successor to SIMNET is called DSI, or the Distributed Simulation Internet, if I have the correct acronym, which combines broader bandwidth with new graphics and networking standards, literally allowing an army of linked individuals, spread across the globe, to join each other in that military amusement park. Not formally different from what some people propose for interactive, navigable, immersive cable-TV games. Of course, what does program content mean in the context of this DSI?

Or what is history? One of the first implementations of the DSI was a minute by minute, foot by foot reconstruction of a Gulf War skirmish known as the Battle of 73 Easting. As you might expect, it plays the battle forward and backwards, and allows you to view it from any angle. It also allows you to create alternate battles from this reality base. Considering how much history has already been prepared in cyberspace, it is truly meta-fictional that 73 Easting was presented to the Senate as the first example of virtual history.

Unfortunately, this is a normal theme in the history of the history of technology. Television is an excellent example. According to evidence presented in Steven Spielberg's earlier "Raiders of the Lost Ark", it was possibly the God of Israel who invented both television and virtual reality. But according to the Nazi's and some others, it was Paul Nipkow who discovered it in Berlin in the 1880's. His fascinating electro-mechanical telephone for the eyes coupled unique spinning-disk spiral scanners, known as image dissectors, with magnetically-controlled crystals that occultly served as light-valves.

Nipkow worked for city railroad company during the electrification and transportification (which is a deliberate rhyme with fortification) of Berlin, designing a street-car semaphore signal system. It is a not so odd fact that his television system mainly resembled the axles and wheels of a railroad car... 2 spinning disk scanners synchronized by an fixed axle between.

By the 1890's, apparently the signal system was in place, the job had probably settled down, and in his private inventing life, Nipkow had moved on, bypassing further development on the television to focus on his new next obsession, the invention of a working helicopter.

More than thirty years later in Weimer Berlin, construction began on the Funkturm, the Eiffel Tower of Radio, defining what became the communications heart of Berlin, an area so important that it later was given the name of Adolf Hitler Platz. Nipkow was an old man, and practical, low-resolution mechanical television systems based on his scanning scheme had come into existence in Germany, the UK, the US, and elsewhere. This was television with less than 40 lines, but it was a commercial television, with regular scheduled broadcasts from the Funkturm by 1929. At that moment, it became clear that the real challenge for television engineers lay in high resolution television; breakthroughs in high frequency research promised broadcast systems and receiver sets with over 400 image-lines.

Certain people knew that this same technology would also make possible a practical system of radio-wave based detection and ranging of distant flying objects... what we know as radar. As a result, as mechanical television died a natural death, due in part to the worsening financial situation world-wide, a decision was made in the 3 main TV countries to promote the creation of a popular, entertainment-oriented high-definition television system; the goal, never publicly stated, was to create both the industrial and human resource base necessary to design and manufacture a practical air defense system.

This created a peculiar situation. Germany provides the best example. First, Hitler declared all German television research a state secret. Then the public search began for facts that would establish German priority in television research... historical priority. Paul Nipkow was snatched from obscurity to become a new national hero... the Father of Television. England replied... or maybe they started it all with the Edisonification of John Logie Baird, who became the Other Father of Television.

In every country, television history, like television itself, was discovered, or invented. Books were written, and in other places, factories were built. In 1941, not long after the radar machines were switched on in England, Holland, Germany, and elsewhere, Paul Nipkow died, which triggered his greatest honor... Paul Nipkow's funeral was broadcast live on Fernsehsender Paul Nipkow, the Nazi high definition TV station named after him and broadcasting from atop the Funkturm in Berlin.

5 Par.Worlds

More than 50 years after Nipkow, or right now, as my more associationally minded colleague from Earth might say, we have mind amplifiers, as Howard Rheingold calls the modern computer. Artificial realities have increased in number, mechanical and immaterial transportation have improved, and with the necessary increase in modal changes have come increases in the descriptive power of association and metafiction.

So, again, what should we see when we look at birds? Maybe, metafictionally, they could remind us of a navigational ethics... since the ride is so many different possible things, and since on occasion we are on the other side of the ride, go ahead and go where you are going, in whatever way you wish to travel, just try to remember you are responsible if you kill when you get there. Unfortunately, our usual sad situation is very much like that of the religious soul told to remember something after death, who, on

arrival in the other world, only remembered once having had a conversation with someone, but not what was said.

Several months ago, at the Cyberspace Conference in Austin, a fellow came up to me and said, "Congratulations, I work at Hughes Aircraft, and I used to have the same job as that guy in your film". In "WAX", a narrative metafiction, Jacob Maker works on the Intergrated Air Battle Mission Simulator, writing the code that controls the acquisition of target information. It is up to him to make sure that the gunsight displays work, that what the pilot sees, whether by radar, infrared, or simple sight, does coordinate with his use of weapons. By congratulations, the fellow from Hughes meant that he used to be Jacob. After 12 to 16 hours in a completely immersive, photorealistic flying environment, it was time to go outdoors, and as he told me: "I'd go outdoors, just out onto the street, and I'd wonder... am I supposed to kill now? And what was really strange, you know," he said, "was that after a while, I started seeing these lines, they were just floating in the air, like the marks your guy was seeing in the film." The fellow from Hughes was much happier now, as he had gotten himself transferred out to a part of the company that was trying to find a way to convert flight simulators into personal amusement park pods.

Unfortunately, in either entertainment or war, navigation isn't usually free... it's closer to semi-autonomous. Often, in both, you can go where you want, but only as long as you make sure you kill and spend disposable income. Grotesque narrative dealt with this particular difficulty of navigational ethics in immersive environments long ago, by transferring autonomy to the artificial world... by stripping the creator of an artificial world of all free will, and passing a parody of that on to his or her creations. Such fictions are invariably metafictions, as there is always a rather smooth continuum from the created and autonomous world to the narrative itself, which, being also a creation, is implicitly also autonomous. This is half-way to recursion, the creation of endless mirrors, or other interfoldings of space and light, which in metafiction have always led to worlds within worlds, just around the corner from us but burdened with other space-time rules... not just alternate histories, but parallel universes.

When the Jurassic scientist, embedded in the belly of the anonymously piloted helicopter, looks out through the metal bird's window-eye at the free-floating pelican, it is easy for me to make the associative jump to the artificial life scientists, who watch freely navigating autonomous graphic agents on computer machines, and see life. They claim that automatism, of the kind once given rhetorically in grotesque fictions to describe an ethical dilemma, has now become practical. With this, metafiction becomes perhaps experimentally verifiable. Windows open onto other worlds that might really be there.

The Game of Life is a computer program - a virtual, time-based machine that floats as distributed, changing patterns inside many popular mind amplifiers. This program consists of a small set of rules, a tiny grammar that controls an on/off graphic display of dots clustered together as gridded pixels on the 2D screen you see from outside the machine. The rules turn the pixel dots on and off, and make the dots interact with each other in order to determine the order of this flashing. Some of the patterns resulting from this interaction have the ability to grow and

maintain themselves in complicated shapes, which can move through 2-D screen space, and even reproduce. Writers and players of the game claim that these dot-group pattern behaviors are mimetic of life itself. They then on occasion argue that anything that so clearly imitated life must be alive itself, potentially with its own point of view, as part of a limited but autonomous alternate world embedded within our own.

The Game of Life is an example of cellular automata in action. Cellular automata have also been practically applied to image processing. The pictures to be processed in this manner have often been machine gathered and transmitted to us through great noise from places not part of our normal point of view; for instance, the point of view of someone who can read the constituent parts of your blood; or the point of view of a TV camera on the top of a rocket plummeting out of control towards the moon.

Pictures to be processed are divided into pixels; the grammars go to work on these pixels, forcing them to interact, forcing the picture to become more visible to us. Potentially living, or at least potentially autonomous pixel groups self-organizing into potentially autonomous, substantial, though still changeable image-shapes, leaving us with pictures that have more visible information than before the process started.

As cinema collapses into the computer, where it will meet virtual reality, science, and many other residents of our cultural world, we approach a situation where all the film production data, gathered from places beyond our ordinary point of view, is passed into a unitary workstation... the maker, sitting in front of the workstation screen works on this data like cellular automata on pixels, forcing various pieces of meaning to interact so that pictures will become more visible to us. However, simultaneously, the maker will also encounter real automata inside the machine....

The maker slowly navigates through the real-time, proto-narrative space of the production data, applying any of a variety of processes to that data, in any sequence desired, controlling composition within frames and between frames interactively, occasionally mixing real-world images with synthetic objects or character elements... all the time composing literal and associative meaning. All processes, from the manipulation of synthetic geometries to the collation of associations, have been partially mechanized, so that the narrative building proceeds with a partial autonomy that allows the workstation screen to look back. The mind amplifier has become a mirror, and at a rhetorical and virtual distance behind the mirror, anti-eyes connected to an anti-body in an alternate universe embedded in ours watch back with a glimmer of narrative intelligence, ready to play you back all the histories of that 73 Easting patch of desert, including the many possible alternate flight paths of semi-autonomous weapons over that part of virtual Iraq... misguided missiles that are willing to stop and assist you with both spell checking and story building, if that's what the story requires.

In many Japanese newspaper offices, there are old and giant composition typewriters with hundreds of keys for the thousands of pictographic kanji characters. Each key has 21 shifts... the Roman alphabet almost hides in a single key. Writers, however, now use personal word processors with the same number of typewriter keys we are used to, that hold both the miniature, alternate Japanese phonetic alphabet, along with the Roman. As you type, the computer

collates your pseudo-phonetic strokes, compares them with a built-in kanji chart, and offers you choices of alternate kanji-pictures in a menu at the bottom of the page... a spell checker in reverse, an inadvertent poetry machine mechanizing the processes of association. In cinema, as it slowly collapses into personal computers, kanji are replaced by images and sound, and the semi-phonetic alphabet by your descriptions of your images... the computer offering fill-in-the-blanks association opportunities (or, in less delicate software, spell-checking necessities), to help you get that story into reasonable communicative shape.

Give names to pictures in a semi-intelligent picture processor, and the machine begins to sort the pictures into proto-sequences. The maker looks at these, chooses the clumpings that are pleasing, perhaps adjusts them a bit, then turns back to the machine, which reapplies its ultimately mutational rules of travel and association, adding organization in several possible ways, which are then again chosen from. Navigation through choices made by the machine soon becomes a primary form of story-construction for the maker, who travels through machine-offered potential worlds, choosing the ones that become virtual worlds... leaving a trail of partial and rejected universes behind the maker, who has become a sort of aesthetic eugenicist.

The maker is still on a flat-bottomed boat in Pirates of the Caribbean at Disneyland, traveling inevitably forward, though in this case building rather than viewing. Whether traveling through alternate worlds, traveling through immersive environments that force the creation of association, or traveling through mechanized association in order to create immersive environments... navigational ethics remain a priority. In the future, when you can go anywhere you want, cinema, by whatever name, will become a grotesquerie without grotesques... a metafiction where information wants to be free, and stories possessing senses, skills, and resources stutter in and out of existence in digital space-time, on earth and in other worlds. With immersive environments now even embedded within one another, with modal changes available at any moment, and association almost a style of knowledge, it's good to remember, though it may be difficult to remember, what it is you are supposed to remember.

I personally work in the area of cinema that I call image-processed narrative: a type of narrative where both the images and the narrative are processed by both myself and machines, and where, in the process, navigational ethics are attempted. So I personally welcome this, our new proto-future, where the past imitates the future, where metafiction is potentially experimentally verifiable; where, as in the book I read last week, wrinkles in the universal background cosmic microwave radiation led an enviably optimistic popular cosmologist to the conclusion that the universe is alive, that it reproduces, and that as a result there are infinite connected or embedded universes probably related, struggling through the impractical difficulties of evolution in action. A proto-future world where new and old media imitate one another, where the single user is not much different from the single author, and where rhetorical autonomy has been extended to machines... though hopefully, it will be given to people in equal or greater amounts.

< Why is Good Electroacoustic music So Good? Why is Bad
Electroacoustic music So Bad? >

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Editor's Notes: "Computer Music Journal" 18:3--Fall, 1994

As in the past, I am circulating the editor's notes of an upcoming issue of "Computer Music Journal" in advance of their publication. My hope is that readers of this electronic posting will respond with letters that can be printed in the same issue as the note, leading to a more active debate.

All readers are invited to reply with succinct comments on one or more of the (rather large and weighty) questions brought up below.

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In this Editor's Note, I would like to return to the tone and format of a previous series of "Computer Music Journal" Editor's Notes (see below), and discuss basic "dilemmas" and questions related to our art.

Many of those active in creating or consuming contemporary music have commented that truly "good" (in their subjective opinions) electroacoustic music can transcend the boundaries of traditional music and provide exciting new definitions of what musical expression and communication can be. At the same time, many of these same members of our community find that the less-highly-valued examples of electroacoustic music can indeed be significantly "worse" than even very "bad" traditional music.

What is it about computer music (and electroacoustic music in general), that leads to this? How is the process of composition and performance different--technically and aesthetically--in ways that effect the listener's perception of quality? In this note, I will offer several of my own observations on this subject, and solicit reader responses.

I believe strongly that there are several musically-significant differences between electroacoustic music and instrumental music, and between contemporary (late 20th century), and historical music. I would like to outline a few of these below and invite your comments.

In the last 350 years of Western musical tradition (which serves as the basis of most electroacoustic music of the last 40 years), the roles of composer, performer, and audience were relatively static and well-understood. The few cases of people who were known primarily as performers, and secondarily as composers (e.g., Paganini), are generally viewed as exceptions that have led to extreme composition styles. For a good many composers/producers of electroacoustic music (this editor included) the possibility to play the role of "composer as performer" has a non-trivial--if not central--importance in their practice of the art. Is it really the case (as often cited in discussions of "bad" pieces), that performers frequently "save" instrumental compositions in their interpretations, and that no such option exists for the composer/performer of electroacoustic music?

The increasing use of computers in structured real-time improvisation--some call it "interactive composition"--leads to

another set of issues. Instrumental composers such as John Cage and Karlheinz Stockhausen have long written "composed improvisational" music, wherein the score gives the performers abstract instructions with much less detail than the traditional pitch/time/articulation information captured in common-practice Western music notation. The debate about where improvisation ends and composition begins is taking place in instrumental as well as electroacoustic music, though the participation of computer programs in the form of "active" instruments or automatic accompanists provides for new situations. The two basic questions here are whether it is even relevant to differentiate between improvisation and composition (I believe it is), and whether there are musically-important differences between "static," "procedural," and "intelligent" or "adaptive" computer-based instruments (I believe there are).

It is both a blessing and a curse that the new instruments of electroacoustic music (and modern recording studio technology), have allowed many composers who are not schooled in the classic/romantic Western music tradition to create "serious" musical works. This has, however, led to many compositions that bring up the "question of musical structure"--pieces where listeners ask the question of what "good" musical form is, and how "musical dramaturgy" is different from "theatrically-structured music." I would contend that there is indeed a fundamental difference in how listeners perceive structure, repetition, time, and thematic development in theatrical vs. musical forms. It is taken as obvious--based on the many differences between our visual and aural perception channels--that thematic development in music is quite different from character development in theater, and that the many aspects of structure that influence the audience's perception of tension and relaxation and their perception of time are quite different among the various "interactive" art forms (music, theater, cinema, installation art, etc.). To what extent is this a factor in "good" and "bad" electroacoustic music?

There has already been a lengthy and complex--though unresolved--discussion of the aesthetics of the use of 20th electronic media in live performance situations. This discussion will continue in several articles in our current series on "composition and performance in the 1990s." In answer to the questions that are the title of this note, I would simply say that "good" (in my humble opinion) electroacoustic music succeeds in creating a listening space all its own, independent of the hall or room in which it is played, and conversely that "bad" electroacoustic music can be flat and "space-less" in the best hall with the best projection equipment and personnel. Just as one would (or should) never play a simple recording of acoustical instruments over loudspeakers in a concert setting (trying to deny the technology, as Roger Johnson would point out), one can fail by producing electroacoustic music that ignores the performance space. I am most intrigued by several pieces that I have heard in the past that introduced themselves as specifically intended for performance over home stereo systems, or via headphones, or solely for performance in large halls with expensive sound projection systems.

Michel Waisvisz and Joel Ryan, who worked together as instrument innovators and performers at the STEIM Institute in Amsterdam, have both frequently pointed out that there is an important role played by "effort" in most traditional musical instruments--a role that is often completely ignored in electroacoustic instruments, especially those that adopt the organ (rather than the piano)

keyboard as their performance interface. How relevant is this in the listener's perception of the music? Can it be that our new instruments are "too easy" to play?

To get back to the two questions that serve as the title of this note, I believe it would be interesting to think of electroacoustic music as "post-modern" art--to think of music in the late 20th century in relationship to the other arts of our time. The thoughts of Dominique Richard on this subject lead one to contemplate whether we--as practitioners of that art--are acknowledging or denying the relationship. The recent interest in Jacques Derrida's deconstruction theory (which now seems to have reached its apex and to be slowly dying out), shows that art theory and aesthetics can change radically in a relatively short period of time. The intense application of deconstruction theory to several other art forms--especially those based on the word and the image such as literature and cinema--has been all the rage in academia for the past decade, and has had no significant parallel (to my knowledge) in music theory. What is the reason for this?

I would like, with this note, to return to the discussion that took place in these pages in 1991 through the start of 1993 ("Computer Music Journal" 15:3-17:1, see the list below). I invite all readers of this note to respond with succinct comments on any of the questions posed above, or any of the topics of the seven editor's notes in the previous series.

References: Topics of Editor's Notes for "Computer Music Journal" 15:3 - 17:1

- "Computer Music Journal" 15:3 (Fall, 1991) "The First Dilemma: The Marginalization of 'Art Music' "
- "Computer Music Journal" 15:4 (Winter, 1991) "The Second Dilemma, or Tape Music--the Poor Cousin"
- "Computer Music Journal" 16:1 (Spring, 1992) "For Lack of a Better Word by Any Other Name"
- "Computer Music Journal" 16:2 (Summer, 1992) "The Composer and the Computer"
- "Computer Music Journal" 16:3 (Fall, 1992) "Performing with Active Instruments"
- "Computer Music Journal" 16:4 (Winter, 1992) "New Music Delivery"
- "Computer Music Journal" 17:1 (Spring, 1993) "Dancing about Architecture?"

Please address your comments to me at stp@CNMAT.Berkeley.edu.

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PROFILES

< Association Science Technologie et Societe >

Association Science Technologie et Societe
17, place de l'Argonne
75019 Paris, France
Tel: (1) 44 89 82 82
Fax: (1) 40 35 27 73

Our association, "Science, Technology and Society" (ASTS), is a non-profit organization that was created in 1981 by a group of engineers, physicians, lawyers and executives from various sectors. Their objective was to set up a structure where they

could share their experiences and formulate propositions. The aim of ASTS is not to arrange gatherings for the sole scientific community, for they already have their own organizations for this purpose, but rather to establish a link between the scientific world and society at large.

Can we reasonably look at science and technologies in the same way today as we did in the nineteenth century? Is this major field of human activity the ideal, inescapable and only way towards progress? It seems, as we approach the third millennium, that the international scientific community, and more generally all those who are concerned about the role of the different fields of science and technology, agree to reject certain scientific approaches such as came about in the nineteenth century. They also acknowledge the fact that science and techniques are first and foremost the product of culture and of history and that they are a powerful medium through which society expresses itself.

This new awareness in no way reduces the weight of scientific research as one of the most enlightening sources of knowledge. Free from any dogmatism, it should fulfill the essential role of making us question ourselves permanently on where our civilizations are heading and, why not, on the future of our planet and its people. Science, an often neglected part of our culture which we like to think of as comprehensive, gives us plenty of food for thought, endlessly forcing us, through the swiftness of its evolution, to adjust: where are we heading and for what purpose? Where are our bearings in the rapid changing of society?

One of the objectives of ASTS is therefore to be a structure for reflection and for the confrontation of ideas between scientists, engineers and technicians and also anyone who has to use the results of research in his or her professional life, or simply anyone concerned by the questions. Their common point being that they all believe that science must play its part fully in the economic but also social and cultural development of society.

< The International Center for Video Creation (CICV) >

Pierre Bongiovanni, Director
Josephine Van Den Bossche
Centre International de Creation Video
BP 5.25310 Herimoncourt
Tel: (33) 81 30 90 30
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The CICV is a research center for electronic arts located on the French-Swiss border and sponsored by the European Community, the French Ministry of Culture and local organizations. The goal of the CICV is to put image and sound technologies and communication network potential (internet, ISDN, ATM ...) at the disposal of researchers and artists, in order to:

- * implement the creation of artworks (films, videos, theater, installations, performances, interactive devices ...),
- * develop a theoretical approach to the image, the imagination and communication in liaison with scientific domains and the humanities,
- * promote discussion on how new technologies affect cultural, social and economical development.

The CICV incorporates the following tools:

- * digital sound and image post-production studios
- * graphic design stations,
- * a resource center (documents and video tape library)
- * accomodations allowing for residencies from a couple of weeks up to several months, of researchers and artists from all over the world.

Besides this mission of research and creation, the CICV organizes activities in the following areas: training (art students, school teachers, community leaders, etc...), prospective research (organization of seminars and colloquia in France and abroad).

< STARNET - Science Technology and Art Network >

MindVox

Peter Terezakis, STARNET Moderator

Tel: 212 989 2418 (mention STARNET)

Email: peter@phantom.com

Email: starnet@phantom.com (information)

A new entity, "starnet" has been created to provide a high quality meeting place for the communication of ideas and information between members of the global community whose interests, concerns, and/or work involves a combination of pure science, applied technology, or artistic endeavor for the betterment of the human condition. The collective postings, development, and growth of starnet also provides a virtual exhibition space and registry for artists where completed works may be on file to be downloaded and viewed/heard by other artists, curators, or interested parties - on demand. The electronic nature of this project will also allow for the creation of new and different forms of artistic expression.

Forum postings and discussions will focus on fine art exhibitions and announcements, calls for works, interesting trade shows, products, materials, critical reviews, requests for technical assistance, studio/laboratory experiences, software suggestions, and the like. We will carry on in the best traditions of discussion, development and innovation following the examples and standards of quality established by such visionaries as Billy Kluver and Frank Malina. Many of you will recall that Billy Kluver began an organization called Experiments in Art and Technology in 1960 which involved a number of artists including John Cage, Robert Rauschenberg, Jasper Johns, and Jean Tinguely. Frank Malina began the august journal Leonardo in 1967 which continues to this day with the same energy and mission under the direction of Roger Malina. Leonardo features articles written by artists, scientists, critical thinkers, and is a continual source of the highest quality information and inspiration. With these examples in mind, STARNET is open to architects, artists, educators, scientists, students, technicians, and writers - anyone who is interested in the spirit and elusive gratification of continual discovery: As long as all who participate do so in the spirit of an enlightened and responsible citizenry.

MEMBERSHIP: Due to the experimental nature of this cyber-space-art-work-in-progress, STARNET is currently a closed forum with membership being granted only upon acceptance of member application. In order to apply for membership, please send your reason for wanting to join starnet, fields of interest/expertise to: starnet@phantom.com.

RATES: STARNET exists within a commercial bulletin board and represents an extended experiment in the offering of a service to the professional community which it serves and as such is not subsidized by an academic institution. Readers of MONDO, WIRED, and skaters of the net are probably already acquainted with the unique nature and character of MindVox, so it will come as no surprise that management has offered us a great deal.

Individuals currently not on the Internet may subscribe for \$15.00 per month or \$150.00 per year with full Internet services and access. Individuals who already have net access may subscribe to MindVox (and this sub-board) for \$10.00 per month or \$100.00 per year. If you are already on Vox, there are no extra charges. Individuals or institutions are able to send announcements directly to starnet@phantom.com for posting without being participating members. Starnet exists in Vox (MindVox) as a general (usenet) forum and also has a number of archival sites.

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ANNOUNCEMENTS

< Natural Science and Art / Art and Natural Science - Attempts at Encounter >

Symposium in Leipzig
December 1-3, 1994

Dr. Claus Baumann
Gohliser Str. 8
D-04105 Leipzig
Tel/Fax 0341/58 32 53

or

Universitat Leipzig Kustodie
Geothestr. 2
D-04109 Leipzig
Tel/Fax 0341/28 64 53

Organizer: Universitat Leipzig Kustodie / Hayerisches
Forschungszentrum fur Wissensbasierte Systeme Munchen

Concept: Herbert Franke (Munich)
Claus Baumann (Leipzig)

The topic of the event is the manifold connections between natural science, technology, and art, which become more and more significant in many spheres of life in our electronic age.

Leading specialists in the fields of computer technology, mathematics, physics, medicine, human ethology, philosophy and aesthetics will debate this subject in a critical and enlightening way, focussing alternatively on natural science and art. Supporting programme: exhibitions, presentation of videos and films, concerts, etc.

Confirmed Speakers and topics include:
Dr. E. Bannwart (Berline): "Cyberspace and Virtual Worlds"
Dr. H. Daucher (Munich): "Visual Perception of Works of Art"
Dr. I. Eibl-Eibesfeldt (Andechs): "From Sign to Reproduction"

Dr. H. W. Franke (Munich): "New Pictorial Worlds"
W. Holzmuller (Leipzig): "Artistic Thinking in Rational Sciences?"
Dr. Kessler (Erlangen): "The Significance of Visual Examinations
in Medicine"
Dr. Nees (Erlangen): "What is the meaning of a world in which
simulated reality becomes increasingly true?"
Dr. H. O. Peitgen (Bremen): "Fractional Chaos Theory and fields
bordering on Art"
Dr. B. Radig (Munich): Understanding Pictures: Can Machines See?"
Dr. H. Zemanek (Vienna): "Information Technique and Arts as well
as Some Consequences for Philosophy"

< Residency Program at the Experimental Television Center -
Newark Valley, NY >

Ralph Hocking, Director
Experimental Television Center Ltd.
109 Lower Fairfield Road
Newark Valley, NY 13811
Tel/Fax: 607-687-4341

Applications are being accepted for the Residency Program at the
Experimental Television Center. The program offers artists the
opportunity to study the techniques of video image processing
during a five day intensive residency. Artists are instructed in
the operation of the system, and then use the equipment themselves
in the creation of new workds. The imaging system includes such
discrete devices as colorizers, keyers, TBC and frame buffer. Also
included are several Amiga computers, one dedicated for use with a
Toaster, expanded memory and genlock, integrated with a patching
matrix.

This program is open to artists from throughout the US and
supports all genres which approach video as a unique art practice.
Participants in the program have complete aesthetic control over
all aspects of the project. Artists must have prior experience in
video production. Applications must include a resume and a project
description which indicates how image processing is integrated
into the work. First time applicants are asked to send a videotape
of recently completed work, either 3/4" or VHS formats, along with
a self-addressed, stamped envelope if you wish the work returned.
Please select a five-day period along with alternate dates during
the period September through January 1995. Interested artists are
encouraged to write the Center for further information, including
a complete list of equipment available.

This program is supported by the contributions of artists and by
the New York State Council on the Arts and the National Endowment
for the Arts.

Deadline for applications is July 15, 1994

< Electronic Music Graduate Assistantships at Ohio University
School of Music >

Mark Phillips
Department of Composition
School of Music
Ohio University
Athens, Ohio 45701
Tel: (614) 593 1629

Deadline extended: May 15, 1994

Availability: Assistantships are limited in number and awarded competitively. It is anticipated that one or two awards will be given for the 1994-1995 academic year.

Duties: Specific duties will vary depending on the qualifications and experience of the candidates. Duties may include the following: supervise electronic music labs, teach undergraduate and lower level electronic music courses, perform routine computer lab and studio maintenance, and create instructional materials and custom software. Time commitment is from 5 to 15 hours per week, depending on the specific assignment and the amount of the award.

Stipend: Stipends range from \$2200 to \$6600 plus partial to full tuition remission. Total value of annual awards is up to \$9636 for in-state students and up to \$12,971 for out-of-state students.

Degrees Offered: Master of Music (MM) in Composition, History and Literature, Performance, Music Education, Music Therapy.

Additional program interest: Master of Arts (MA) degree combining Electronic Music with two other related fields, such as Audio (or Video) Production and Film - available through the Independent Instructional Program (IIP).

Additional Opportunities: Generous studio time allocations are available for working on individual projects in a well-equipped, recently upgraded digital production studio which includes a Synclavier, A-DAT and R-DAT recorders, a rack of various MIDI synthesizers, professional video equipment, and a Macintosh computer. Many opportunities exist to collaborate with student film and video producers, theater directors and choreographers. Opportunities for the performance of student compositions are good. Qualified applicants may also perform (pending audition) in any of several School of Music Ensembles, including the Symphony Orchestra, the Symphonic Band, the New Music Ensemble, the Jazz Band, and Opera Theater, as well as various chamber ensembles.

Additional Income: Opportunities available for qualified applicants include working as a recording engineer for School of Music concerts and recitals and teaching in the School's Community Music Program.

Admission: Admission is by application to the Graduate School and the School of Music. Applicants for the MM in Composition or the MA through the Independent Instructional Program must submit a portfolio of their creative work. An in-person interview is usually required for those seeking a Graduate Assistantship in Electronic Music.

< The 4th International Electro-Video Clip Competition >

Audio entry:
Claude Schryer
4th International Electro-Video Clip Competition
c/o ACREQ
4001 Berri, Suite 202
Montreal, Quebec, Canada H2L 4H2
Tel: (514) 849-9534
Fax: (514) 987-1862
Email: infomus@vax2.concordia.ca

Video entry:
Emile Morin
4th International Electro-Video Clip Competition
c/o OBSCURE, Membre de Meduse
729, Cote d'Abraham
Quebec (Quebec)
Canada G1R 1A2
Tel: 418 529.3775
Fax: 418 529.5611

L'Association pour la creation et la recherche electroacoustiques du Quebec (ACREQ) in collaboration with the FM Network of the Societe Radio-Canada (SRC) and l'Association cooperative de production en arts actuels Obscure present the fourth edition of the International Electro-Video Clip Competition. This competition is targeted towards composers of electroacoustic music and independent video artists who create original relationships between image and sound. All sound and video artists are invited to create a miniature audio and/or video work of a duration between two and three minutes. Submissions must arrive at ACREQ by Friday, May 27, 1994 at 5PM. Ten audio and ten video works will be preselected by a jury presided by Quebecois composer Yves Daoust.

The ten audio and ten video works in nomination will be broadcast during a Gala-evening, which will take place on Sunday, June 5, 1994. Three prizes for each category will be presented. Come attend the finals of the competition and vote for the work of your choice!

PRIZES

Audio Category (solo tape pieces):
1 jury prize: \$500
1 audience prize: \$250
1 radio audience prize from Societe Radio-Canada

Video Category (sound-image):
2 jury prizes
1 audience prize

In addition, the works by the finalists in the audio category will be published on compact disc. The video works will equally be published in the appropriate format.

All participants can submit a maximum of 2 works in each category. The selection of the finalists will be announced in a press release on Monday, May 30, 1994.

Emile Morin from OBSCURE offers the following orientation for their domain in the competition:

Within the context of its multidisciplinary productions and distribution, OBSCURE has joined with the ACREQ in organizing the 4th Councours International Electro-Video Clip. Interested in exploring this new terrain where correlations between new electroacoustic music and independent, experimental videography occur, OBSCURE has accepted responsibility for the videographic segment of the competition.

Focusing, there, on video production, our interest lies in the production of original videographic works which echoe the correlation of image and sound beyond the simple and immediate

relationship generated by their parallel presence. Our interest lies in video works which break down the preponderance of image over sound.

We expect these videographic works to explore the tensions produced by the friction of image and sound, the inherent rhythm of the cathodic screen's scan rate, the luminosity of noises, the contours of sound on the screen... We hope that participating artists will be drawn to operate in this terrain where image is defined by noise, where sound is drawn with light.

These formal considerations imply another process, a veritable diversion of the conventional relationships between visual and audio frameworks. No longer with the image be seen without its noise being heard, no longer with the sound be heard without the light that it projects being seen. The video seen (or heard) from this perspective promises to scramble to scramble existing codes. Above all, the video is no longer linear or unidirectional. It is resounding.

We are counting on your collaboration in making this proposal known to the artists you are associated with. We hope that we will have the opportunity to discover the ways in which some of them create unique relationships between image and sound.

The chosen works will be exhibited publicly in Quebec and Montreal, and compiled in a yet-to-be determined format. Three of these works will receive awards. The first place winner will be granted an artist's residence in the multidisciplinary Meduse complex. The two other finalists will receive a cash prize.

< ART '95 - New International Art Competition >

Ashley Ames
ART '95
275 Route 304
Bardonia, NY 10954 USA
Tel: (914) 623-0599 (USA toll free: 800-278-7000)
Fax: (914) 623-0611

ART '95 is a new annual, open multimedia competition. All artists are invited to take advantage of this exciting and innovative opportunity to win and exhibit their art work in New York City. The competition includes \$55,000 in prizes and awards. Judging will take place in March, 1995, with a "Top 70" Winners Exhibition at Art 54 Gallery in New York July 20-August 6, 1995.

Categories include painting, drawing, watercolor, pastels, mixed media, printmaking sculpture, illustration, miniature art, cartoon art, computer art, icons, photography, holography, clay, glass, fiber, jewelry, wood, metalwork, paper, enamel, furniture.

Artists worldwide have an opportunity to gain support, recognition and exposure to art critics, gallery owners, collectors and the general public. In addition, all entering artists will have the invaluable opportunity to receive referrals to important New York galleries interested in their style of work.

Requests for official application forms must be received by July 28, 1994 to allow ample time for applicants to prepare their

entries. Requests may be sent by telephone, fax, or mail.

< 1995-96 Fulbright Grants >

U.S. Student Programs Division
Institute of International Education/New York Headquarters
809 United Nations Plaza
New York, NY 10017 USA
Tel: (212) 984-5330

May 1, 1994 is the opening of the 1995-96 competition for Fulbright Grants for graduate study or research abroad in academic fields and for professional training in the creative and performing arts. The purpose of these grants is to increase mutual understanding between the people of the United States and other countries through the exchange of persons, knowledge and skills. For all grants applicants must be U.S. citizens at the time of application, and hold a bachelor's degree or its equivalent by the beginning date of the grant. Creative and performing artists are not required to have a bachelor's degree, but they must have four years of relevant training or study. All applicants are required to have sufficient proficiency in the language of the host country to carry out their proposed study or research.

Fulbright Full Grants provide round trip international travel, maintenance for the tenure of the grant, a research allowance, and tuition waivers, if applicable. Fulbright Travel Grants provide round trip travel to the country where the student will pursue study or research, and are intended to supplement maintenance awards from other sources that do not provide funds for international travel or to supplement the applicant's personal funds. All grants include basic health and accident insurance.

Applicants must submit their completed applications to the U.S. Student Programs Division at IIE/New York by October 31, 1994.

< Technology and the Composer - Luxembourg and Maryland >

Luxembourg:
Linda Dusman
Music Program
Department of Visual and Performing Arts
Clark University
Worcester, MA 01610 USA
Tel: (508) 793-7316
Fax: (508) 793-8844
Email: ldusman@vax.clarku.edu

Maryland:
Thomas DeLio
Department of Music
Tawes Fine Arts Building
University of Maryland
College Park, Maryland 20742
Tel: (301) 405-5534
Fax: (301) 314-9504

Two conferences exploring "Technology and the Composer" explore the continuing tradition of music composed for tape. The conference organizers quote Jean-Claude Risset's views about the importance and longevity of the medium:

"I will argue that this is by no means an obsolete genre - on the contrary, much music for real-time systems may disappear with the evolving technology."

The Luxembourg City even takes place on June 12 - 15, 1994, and is supported by the Clark European Center, Ministere des Affaires Culturelles de Luxembourg the Group for Electronic Music (GEM), Clark University and the College of the Holy Cross, Worcester, Mass. USA. The College of Arts and Humanities and the Department of Music of the University of Maryland at College Park hosts the other conference November 10-12, 1994. Concerts include music by Koenig, Nono, Cage, Dashow, Belet, Oliveros, Laske, Risset, DeLio and others. There will be presentations by Salle Mansfeld, Michael Hamman, Otto Laske, Joji Yuasa and Jean-Claude Risset.

< Call for VIDEOS for MULTIMEDIA '94 - Extended Deadline >

Marc Brown, Co-Chair
Tel: 415 853-2152
Email: mhb@src.dec.com

Dave Redell, Co-Chair
Email: redell@src.dec.com
Tel: 415 853-2131

DEC Systems Research Center
130 Lytton Avenue
Palo Alto, CA 94301
Fax: (415) 853-2104

Video is an excellent way to reach a wide audience both in and out of the conference setting. Conference attendees can watch videos at their leisure in a special area. After the conference, they can take the video home with them and can show it to their colleagues.

We envision that the ACM Multimedia' 94 video will feature multimedia systems in action, but videos of any topic relevant to the conference are welcome. Videos are reviewed for the relevance, technical content, originality, presentation quality, and clarity. Abstracts of accepted video submissions will be published in the conference proceedings. This will provide an archival description of your video. The videotape will be available for purchase from the ACM.

Each videotape must stand alone, and be understandable to viewers who are not familiar with the subject. You cannot assume that the viewer has read the video's description in the conference proceedings. Videotapes will be reviewed independent of any other material that has been submitted to Multimedia' 94.

SUBMISSION DETAILS: Authors should send one copy of a videotape to the co-chairs by May 1, 1994. This date is firm. The videotape should be five to eight minutes long, and must be in VHS NTSC format for easy reviewing; however, the master tape should be recorded in the best format available to the authors---the final versions of accepted tapes should use a high-quality format. The accepted videos will be edited onto one tape, which will be shown at the conference and will be available for purchase from the ACM.

Each videotape must be accompanied by one copy of a one- or two-

page description of the material shown in the video. The descriptions must be formatted following the guidelines for ACM proceedings. The video descriptions will be published in the conference proceedings.

NOTIFICATION: Authors will be notified of acceptance or rejection by early June. For each accepted video, the final version of the textual description will be due in mid summer, and the final versions of accepted videos will be due in very early fall.

COPYRIGHT DETAILS: In order for ACM to publish the videotapes and to show them at the conference, we will need the authors of videos to sign a copyright release form. You will keep ownership of the copyright on the video, but you give us the right to show and sell it. The form will be sent to authors of accepted videos, but if necessary, you can get one in advance from one of the Videos Co-Chairs.

As the producer of a video, you should be careful about observing copyright laws. Make sure you have the appropriate permissions to use any video clips, music, or other copyrighted material in your video. Media places usually have a library of stock music that can be used for a nominal fee.

Videos shown previously or available commercially will be considered for the Video Programme providing no copyright infringement is involved, and the previous venue is unlikely to be familiar to conference participants.

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PUBLICATIONS

< IDEA - Directory of Electronic Arts 1994-1996 >

Annick Bureau, Editor
CHAOS Editions
57, rue Falguiere
75015 Paris, France
Tel: 33-1-43 20 92 23
Fax: 33-1-43 22 11 24

IDEA, the International Directory of Electronic Arts covers the whole range of activities in the field of Art and Technology, with a truly multidisciplinary approach. Topics include computer art, computer animation, video, interactive art, networking, holography, laser, light, computer music, sound works, space-sky art, performing art, computer literature and poetry, robotic art, virtual reality.

The third edition is bilingual French/English, and will include more than 3000 addresses world-wide, concerning organizations (festivals, galleries, museums, art centres, schools and universities, centers for research and creation, production companies, resource centers, non-profit organizations), artists, people (theoreticians, critics, researchers, curators), and periodicals. This edition will have a foreward by Roy Ascott, and an introduction by Annick Bureau. A bibliography and four indexes complete IDEA.

People can improve the IDEA bibliography by communicating

important publication sources to the editor. Please mention the title, author, publisher, year of publication, country of publication and language in which the book is written. Please limit sources to those which have been published after 1992.

< "Configurations" - A Journal of Literature, Science, and Technology >

The Johns Hopkins University Press
P.O Box 19966
Baltimore, MD 21211
Tel: (800) 548-1784 (US Toll Free)
Fax: (410) 516-6968

"Configurations" is the official journal of the Society for Literature and Science. The title Configurations recognizes the significance of the work of "configuring" and acknowledges the importance of the multiple discursive communities that shape or mold the cultural and social production of literature, science, technology and medicine. While configuring is traditionally thought of as theoretical, mathematical, literary, rhetorical, and tropological, "Configurations" affirms that configuring can also be visual, graphical, geometrical, instrumental, material, and embodied. The editors are Wilda Anderson, James Bono and Kenneth Knoespel. Alan Rauch is book review editor, and Sally Shuttleworth is corresponding editor.

Founded in 1985, the Society for Literature and Science fosters the multi-disciplinary study of the relations among literature and language, the arts, science, medicine, and technology. The Society has its own Speakers' Bureau and holds an annual convention.

< Design and Technology - A New Book Series >

Isaac Victor Kerlow, Guest Editor
119 West 23 Street, Suite 1004
New York, NY 10011
Tel: (212) 675-8161 or (718) 636-3693
Fax: (212) 675-8161 (press * during message)

Isaac Victor Kerlow wrote to introduce a new book series entitled "Design and Technology" that he is developing for the publishing house of Van Nostrand Reinhold. These "books" are being developed in both print and electronic formats.

The acceptance and widespread use of computers in the areas of design and imaging have created a significant demand for books that help professionals to:

- a) learn about new techniques and concepts
- b) integrate them into their daily creative routine
- c) keep up with technology-related improvements and innovations.

This new book series intends to fulfill many of these needs by offering books that address both practical and conceptual interests (i.e. "how-to", criticism and theory, and survey books).

Proposals and inquiries should be directed to Isaac Kerlow.

< Artificial Life Online BBS service - alife.santafe.edu >

Christopher G. Langton, Editor

Circulation information:
The MIT PRESS JOURNALS
Circulation Department
Tel: (617) 253-2889
Fax: (617) 258-6779
Email: JOURNALS-ORDERS@MIT.EDU

Artificial life researchers study biological phenomena by attempting to produce lifelike behaviors within computers and other "alternative" media. MIT Press's new ARTIFICIAL LIFE journal is the primary forum for international scientific and engineering research in this new discipline.

The Artificial Life Online BBS is intended to be a central information collection and distribution site on the Internet for any and all aspects of the Artificial Life endeavor. The Alife Online service combines the functionalities of a WWW server, an ftp site, an interactive bulletin-board-system, and Usenet News. The Alife Online BBS is sponsored by MIT Press and the Santa Fe Institute.

There are many different ways to access the ALBBS: telnet, ftp, gopher, and world-wide-web (WWW).

Many of the files and resources here are available to everybody via gopher and WWW. However, to access the full range of BBS services, it is necessary to come in using telnet and to create a local account. This will allow you to participate in the local Alife newsgroup discussions, and to set up personal information files such as a plan, project, HTML personal home page, etc.

To access the ALB and run the "account" program. These accounts will initially be provided free of charge, but we will eventually have to charge a nominal fee in order to cover operating expenses (on the order of \$15-\$25 per year). Subscribers to the Artificial Life Journal from MIT Press will have this fee waived.

Once you have an account on alife.santafe.edu, you can telnet to alife.santafe.edu and simply login as yourself.

You do not have to create an account to use the ALBBS via telnet - you can simply login as "bbs" and browse through the system using the BBS commands. The BBS is basically a highly configured UNIX shell that is intended to be user friendly - yet still allow standard UNIX commands.

To access the ALBBS via world-wide-web (WWW):

Use the URL <http://alife.santafe.edu/>. For best results we suggest using a client capable of handling color graphics and forms, such as Mosaic. A character-based (ASCII) client cBS via telnet:

To set up a local account, telnet to alife.santafe.edu login as "bbs,"alled "lynx" is also available -- but will not support graphics.

To access the www features in the context of a character based client, telnet to alife.santafe.edu and login to the BBS as "lynx".

To access the ALBBS using Gopher:

Connect to alife.santafe.edu (standard gopher port 70).

To access the ALBBS via ftp:

ftp to alife.santafe.edu, login as "anonymous" and type your login@homesite as the password. Everything interesting is in the "pub" directory. To upload information to the ftp area, cd to the "pub/incoming" directory, put your file there, and send an email message to ftp-editor@alife.santafe.edu letting us know the the FTP area. For security reasons, you will not be able to execute "ls" in the pub/incoming directory.

=====

| |
| | JOB ANNOUNCEMENTS | |
| |

< Two Positions at Interval Research >

Ms. Barbara Oshima, Req. #SYTRRSND-94
Interval Research Corporation
1801 Page Mill Road, Building C
Palo Alto, California, 94304 USA
Tel: (415) 354-0944
Fax: (415) 354-0872

Interval Research welcomes applications from professionals or graduating students for the following full-time positions. We are near the end of our search for candidates, so please respond promptly.

Acoustic/Visual UI designer: This person is an accomplished user interface designer/implementor. Should be capable both of design and software implementation of interfaces that involve auditory and visual displays as output devices. The position requires: innovative use of standard input devices including spoken interfaces and ability to create novel interface technology appropriate to the task; facility with crafting sonic and visual environments - hands-on understanding of and facility with artistic and perceptual representations; ability to work on a variety of projects in a research setting.

DSP Algorithm developer: This person is a researcher to be responsible for invention, design and implementation on real DSPs of digital signal processing systems in the areas of sound & image recording, speech processing, spatialization of sound, and signal pattern recognition. A strong signal processing systems background is required. Experience programming digital signal processing algorithms that require performance tuning and integration into working systems also required. Background in human auditory and visual perception is desirable. Some background in multiprocessor operating systems design or real-time systems design is also desirable.

Interval Research is a two year old research company, with fifty researchers of widely varying backgrounds, whose charter is to work on problems and opportunities for a future generation, a new "interval" in the unfolding of electronic media, computation and communication. Interval is an Equal Opportunity Employer.

Send application materials to the person listed above, and specify

which position you're applying for.

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^.....^

```
|
|   LEA
|   FORMAT
|   CONVENTIONS
|
|
```

The following describes the format or markup conventions used in creating Leonardo Electronic Almanac. The function of these conventions is to facilitate perusal through the text, and to make it easier to create conversion programs to various text readers.

=====: Section Heading Delineation - full line character sequence

****=: Item Delineation within Section - full line character sequence

<: Item Title - search for the character "<" followed by two spaces

|_ or _|: This sequence takes you to the next SECTION TITLE. Item titles and author/contributor names appear exactly the same in the Table of Contents and at the location of the actual item. Section names appear in all capital letters, and with this issue will appear with all letters in sequence with no spaces (PROFILES, REVIEWS, etc.).

```
|
|   LEA
|   FTP
|   ACCESS
|
|
```

The following are the specifics about ftp access:

```
ftp mitpress.mit.edu
login: anonymous
password: your_email_address
cd pub/LEONARDO/Leonardo-Elec-Almanac
```

Check the README file for the most current information about the contents in the system, and for the most current information about all of the ftp services.

=====

```
|
|   LEA
|   SUBMISSION
|   GUIDELINES
|   &
|   PAST ISSUES
|   ON
|   TECHINFO.MIT.EDU
|
```

The Submission Guidelines for Leonardo Electronic Almanac are available on MIT's techinfo system, which is also their gopher

service. To gain access to this, telnet to techinfo.mit.edu.

```
select 2) Around MIT - Offices & Services/MIT Press.
select 22) MIT Press
select 5) Journals 1993
select 6) Leonardo Electronic Almanac
select 1) Guidelines for Submission
```

Past issues of Leonardo Electronic Almanac are available through MIT's list server system. To get an index of the archive, send email to listserv@mitvma.mit.edu. The "subject" component of the email message is irrelevant, but the body of the message should contain "INDEX LEONELEC". The output of this request looks like this:

```
LEONELEC 93-00001   PRV OWN V       77   857 93/10/07 08:05:56
-> Leonardo Electronic Almanac - Volume 1, Number 1
LEONELEC 93-00002   PRV OWN V       73  1577 93/10/06 13:00:25
-> Leonardo Electronic Almanac - Volume 1, Number 2
```

To retrieve an issue of LEA, send email to the same list server address, with a message body containing "GET LEONELEC FILETAG", where the FILETAG is replaced with the file number appearing after "LEONELEC". In the above example, one would request "93-00001" for LEA 1:1, and "93-00002" for LEA 1:2.

Submission Guidelines and Past issues are available on the MIT Press file server via ftp. The anonymous ftp server is mitpress.mit.edu. The directory containing the files is pub/LEONARDO/Leonardo-Elec-Almanac. See the README file in that directory for details.

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===== < End of Leonardo Electronic Almanac 2(4) >
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