



Leonardo Electronic Almanac

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Craig Harris, Executive Editor
Roger Malina, Editor

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INTRODUCTION

- < This Issue >
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I am pleased to report additional progress in bringing LEA on to the MIT Press file server. See the report on this topic for details. Auvo Sarmanto, from the Finland Ministry of Education, responded to my editorial addressing socially-conscious development of the LEA resources, appearing in last month's LEA (1:4). I am including a Letters to the Editor segment in this issue because I believe that LEA is an appropriate forum for

this kind of discussion. It does affect our readers as we develop new resources, so I am encouraging feedback from the community.

In this issue we get an inside view of Henry See's perspective, as he tackles sensitive issues in the description about his piece "B*rbie'sVirtualPlayhouse@CityOfTheFuture.ent". This is a multimedia work lampooning Virtual Sex, and was presented at SIGGRAPH '93. Henry describes his work in relation to other VR artists and projects, such as Brenda Laurel, Carl Loeffler, and Michael Naimark. We get some additional insight into the FISEA event, where relevant issues were discussed.

Stephen Pope's "A Taxonomy of Computer Music" appears in this interdisciplinary forum in the spirit of involving a wide group of readers and practitioners in its development. I am hoping that some LEA readers will be interested in expanding on this work in order to develop a taxonomy which can address the broader domain of technological art.

Rich Gold of Xerox PARC announces the PARC Artist-in-Residence (PAIR) program. PARC PAIR unites artists and researchers in joint creative projects. Congratulations are due to the selected artists, some of whom are LEA subscribers.

Richard Zvonar reports on his impression of a new Yamaha synthesizer based on physical modeling. LEA readers are invited to submit critical reviews of the resources that they use in their work. Our community benefits greatly from the insights of colleagues who have direct experience using these resources.

Check the dates on the upcoming events and competitions. Some of them are coming up very soon!

< The distributed LEA and ftp services >
Craig Harris

I feel that it would be useful to inform LEA readers about the format conventions that use in preparing the text-only, distributed monthly Leonardo Electronic Almanac. This should facilitate perusing through the almanac.

====: 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.).

The ftp resources at MIT Press are advancing, as reported in recent issues of LEA. The file server mitpress.mit.edu is now available for ftp anonymous access, and we are proceeding to load up a variety of items. All issues of Leonardo Electronic Almanac are now available directly via ftp. The guidelines for submission are also available, as are the guidelines for

submission for the Leonardo Book Series. I am depositing the full text of the submission guidelines for the Prix Ars Electronica, and an electronic version of the application form on the ftp service. There is still time to send in your work.

Terry Ehling and crew at MIT Press are working on setting up WAIS, gopher, and Mosaic services. Web access will be via http. I am confident that we will be seeing this project advance quickly in the coming months. We can now invite our authors and artists to begin a dialog with us about the most appropriate formats for storing images and sound.

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.

< Letters to the Editor >

From: Auvo Sarmanto <Auvo.Sarmanto@csc.fi>
Date: Mon, 27 Dec 1993
Subject: How to read an evolving LEA?

Dear Craig,

Referring to the "Introduction" in latest LEA written by you I suggest that the LEA subscribers should be provided with a small piece of software in their PCs and Macs which helps browsing the ever evolving contents (including hyperfiles and pictures) of LEA.

I understand the special Brazilian point of Rejane Spitz to have the LEA technology as simple as possible, but on the other hand it is an intolerable idea that we should freeze our marching speed suitable to the least developed members of OUR community. No progress can be expected in this field if do not allow the techniques evolve beyond the ancient ASCII-only mode.

With Seasons Greetings from Finland

Auvo Sarmanto
Ministry of Education

To: Auvo.Sarmanto@csc.fi
Date: Tue, 28 Dec 1993
Subject: Re: How to read an evolving LEA?

Dear Auvo, .

Thank you for your comments. You're absolutely correct that we cannot reduce our goals and content to the lowest common denominator. What I was getting at in the introduction was evolving with a sensitivity towards issues of disenfranchised or lesser-developed communities.

As you indicate, we do need to utilize technologies which take advantage of new resources. Electronic publishing is really in flux right now, and I am trying to balance such issues as

- 1) different computer platforms of our readers
- 2) advantages versus disadvantages of "distribution" using such systems as Mosaic.
- 3) the best use/function of the distributed journal versus extending resources at an ftp site.
- 4) developing some kind of indexing/hyper-mode in the text currently being distributed, or sending around some kind of "reader", as you suggested.
- 5) the patience of our readers to maneuver through systems which keep changing.

We do know that we are making progress with the ftp site at MIT Press. This will allow us to expand that which we can have on demand, and will also allow us to work with both images and sound. We have not ruled out some kind of Mosaic-based distribution either.

While we sort this out with MIT Press, and also hear from our readers (thank you again for taking the time to communicate - this is how we know what you all need and want), I am trying to support the content in a reliable way, so that people will be able to get the information without having to learn new systems each time they get an issue of LEA.

I have been examining embedding some kind of indexing or text marking information in LEA, so that people will have a quick way of maneuvering through the items in each issue. Part of my hesitance there is what I mention above - I have been trying to see where we were going to be able to take this with MIT Press, and I also wanted to be clear that what I was doing to mark up the text was a method that I felt good enough about to keep without constantly having to explain to readers what is different about their issue each time.

Do you have ftp access? That's going to be one issue that will be important. Do you have and now use Mosaic? Certainly we are moving towards a multimedia LEA. We may need to maintain some raw text option for readers who really can't take advantage of the expanded resources as they come on line. I don't intend to force everybody to read text when much more is possible.

We're working on it. Thanks for your suggestion. I'm happy to hear more of your comments and ideas, if you have anything additional that you would like to bring up. It sounds like I should run some kind of brief questionnaire for LEA readers to let us know what they have in the way of resources, and what their main concerns are with respect to what they receive and how they get it.

Best,

Craig Harris

From: Auvo Sarmanto <Auvo.Sarmanto@csc.fi>
Subject: Re: How to read an evolving LEA?
Date: Thu, 30 Dec 1993

Craig Harris
LEA

Thank you for your informative response.

I am using the ftp service of our mainframe and have already downloaded the Mosaic package to my desktop machine.

I think that the most feasible way to read LEA is to download the compressed version of it and to extract it with a combined version of extractor and reader software.

Of course there should exist a SIMPLE and CHEAP solution which could grow to an industry standard. I believe that the MIT Press has all the necessary resources and innovation potential to implement the solution.

My best wishes

Auvo Sarmanto
Ministry of Education
Finland

< Leonardo Electronic Almanac - Resource Development Survey >
Craig Harris

LEA subscribers are invited to inform us about their technological resources and their views regarding the developing resources which comprise Leonardo Electronic Almanac. The following form is supplied to facilitate a standardized response, but readers can respond in any way that seems appropriate. Feedback is important for effective development. Please send responses to craig@well.sf.ca.us.

Editor's Note: Search this text for |_, _|, or FEATURE ARTICLES to jump down to the next section.

.....: CUT HERE :.....
LEA Subscriber: []
Email Address: []

Computer Platform (Check all that apply)

- Amiga []
- Atari []
- DEC []
- DOS/Intel []
- Hewlett Packard []
- Macintosh []
- Next []
- Silicon Graphics []
- Sun []
- Other (Please specify) []

Resource Access (Check all that apply)

- ftp []
- telnet []
- WAIS []
- gopher []
- Mosaic []
- Email Only []
- Other (Please specify)

Format Access (Check all that apply)

- Rich Text Format []
- DOS Text with Layout []
- RFT-DCA []
- Word for Macintosh []

Postscript []
Text Only []
JPEG []
PostScript []
GIF []
TIFF []
PICT []
JPEG []
MPEG []
Other (Please specify)

Sound Formats (Check all that apply)

AIFF []
IRCAM Soundfile Header []
SPDIF []
MIDI Sample Data []
MIDI Sequence Data []
Other (Please specify)

What ftp and gopher sites do you peruse for current information?

What USENET Newsgroups are particularly relevant for your work?

Comments

(Please specify if you do NOT wish comments to be made available to other readers)

=====

FEATURE ARTICLES

< B*rbie' sVirtualPlayhouse@CityOfTheFuture.ent
A Very Low-Tech, Pseudo-Immersive Reality >
Henry See
4371 Christophe Colomb
Montreal (Quebec) CANADA H2J 3G4
Tel: 514.525.7810 home
Email: CDA1077@applelink.apple.com

Intro

Simple programs such as "Eliza" have demonstrated the seductive power of our relationship with computer technology. We are gullible; we want to believe. Now we want to buy into the myth of "Virtual Reality." Not only has an industry spawned around the development of the technology, but another is spawning around the propagation of the myth. The promises are being made. The dowry is being paid. The marriage bed is being laid. And if the emperor has no clothes, it doesn't matter because in VR you leave the body behind. "B*rbie' s Virtual Playhouse" is a satirical look at the three legs of the stool of hip, post-modern life: virtual reality, cybersex, and home shopping. The satire is meant to include both the physical and the contextual trappings of VR. We note this at the beginning because no matter how broad the strokes of satire, there are always people who take it seriously. "B*rbie' s Virtual Playhouse" is a hypermedia work, not a virtual reality. It was financed in part by a grant from the Media Arts section of the Canada Council.

Description

The Ad from late-night TV

"B*rbie's Virtual Playhouse" brings all the excitement of virtual reality to your home! No longer is VR a question of high-end graphics computers, fancy goggles, and data-gloves! You can experience real VR on your home computer! No fuss! No muss! No messy keyboards!

Through the revolutionary new Hot-Date-A-Glove(tm), you have access to all the mysteries, all the adventure, and all the sexual intrigue which make "B*rbie's Virtual Playhouse" the cyberspecial place to be! Don the Hot-Date-A-Glove(tm), squeeze the Generic Sexual Analog Interface Device (Sex AID), choose your character, and become an active participant in this world of the not-so-distant future!

Change your sex as easily as you change your socks! Experience the existential angst of existence as a hypertext link! Investigate the philosophical implications of two-dimensional reality! Have fun and influence pseudo-people! It's the entertainment sensation for the entire family! And not only that! If you act now, you and your friends can play together in "B*rbie's Virtual Playhouse"! At BVP, there's always room for one more!1

1. Multi-user capability is available via networked computers. Batteries not included.

The Brief Description from the On-Line Mall

"B*rbie's Virtual Playhouse" is a very low-tech, pseudo-immersive environment. Visitors to the Playhouse become either B*rbie or her playmate K*n and can play alone or with each other. By putting on the Personal Pseudo-Goggles and the Hot-Date-A-Glove(tm), and by gripping the Generic Sexual Analog Interface Device (Sex AID), they cease being passive observers and are transported across time and space to become active participants in their own pseudo-lives. Important visual cues, such as the in-Playhouse representation of the Hot-Date-A-Glove(tm), forcefully locate the pseudo-B*rbie or pseudo-K*n in the rockin', riotous pseudo-world.

Once ensconced in their new home, visitors to the Playhouse move through the three-dimensional pseudo-space (x-axis, y-axis, and time), exploring different paths of navigation. They may even come into direct contact with household objects! When two or more Playhouses are on a network, pseudo-B*rbie and pseudo-K*n can go visit their pseudo-friends in other modules. Is it B*rbie or is it K*n? Or is it just the pseudo-world playing games with your pseudo-mind?

Description for the Rest of Us

Physical Installation

The physical installation is comprised of two tripods, one for each visitor. Sitting atop each tripod is an Apple RGB monitor. The tripod and monitor measure just under 2 metres. The front of the monitor is wrapped in a cloth enclosure which sticks out the front, narrowing to a small opening which permits only the eyes to see in. This end is attached to a cap which the visitor places on his or her head. Headphones bring alive the exciting

and vibrant stereo sound of the Playhouse, aiding to a great extent in the creation of a virtual space. These pseudo-goggles hark back in appearance to the camera obscura and early still cameras.

The head in place, one hand is then slipped into the Hot Date-A-Glove, the navigational device. (The moniker "Hot" was well-warranted as any of the visitors at SIGGRAPH 93 can attest. It was unusually hot and clammy in the glove....just another of the tactile innovations of the piece.) The glove is comprised of an oven mitt (a beautiful pink with white polka dots) attached to the mouse. Southpaws need not worry as the mouse can be attached to either side of the glove. The other hand grabs the generic Sexual Analog Interface Device (Sex AID), a grapefruit sized lump of styrofoam with embedded microswitches. The reddish-pink lump is covered with a very large condom. We encourage safe sex at the Playhouse. The microswitches read various levels of pressure, rapidity of motion, and coverage of surface area. While beginning its life as the sexual interface for the Playhouse, the Sex AID is becoming a more general emotional input device.

The glove and lump sit on a small shelf which extends out from the front of the tripod. The computer sits on a small shelf in the back. The two Macs are connected via a LocaTalk network to each other, providing the hardware connection which allows the two visitors to communicate together.

Contents

Once hooked up and "inside" the Playhouse, you explore its rooms: the bedroom, bathroom, kitchen, hallway and TV/home entertainment centre. The visual imagery of the Playhouse is very simple. The house is suggested more than depicted. Black & white pencil drawings were scanned and reworked, finally being reduced to 2-bit bitmaps before being incorporated. Colour is used occasionally for hiliters or to draw attention to details. The imagery is purposefully meant to be far removed from the photorealism of VR environments. A black band runs across the top and bottom of the screen, giving the impression of a cinematic aspect ratio. The two black areas are used to present text to the visitor: the bottom area shows poetic phrases relating to the activities of various rooms; the top area gives instructions to the visitor. Navigation through the Playhouse is done via the Hot

Date-A-Glove, the mouse and oven mitt combination. Once in the glove, the visitor sees this hand reproduced on the screen and is able to situate his or herself in the virtual world. Pointing left or right moves around the room. Leaving the hand on an open door moves the visitor through the door and into the next room. To discover your virtual identity, you must enter the bathroom and look at yourself in the mirror.

If during your wanderings you arrive in the same room as the visitor at the other installation, the other will appear before you as either the male or female member of a famous doll couple. At this point, a dialogue begins. Choosing from a prepared list of statements, questions and responses which appear floating over the Playhouse room, the two visitors can begin communicating to each other. One begins the dialogue; the other responds. If the responses are generally positive, the dialogue leads to a seduction. If not, then the two characters fight and separate.

If the seduction succeeds, the two visitors squeeze the Sex AIDs. This triggers a series of bit-mapped, black & white images culled from magazine advertisements. The images are of body parts, very much enlarged: a neck, a knee, an eye, a mouth, hair, muscles, entwined limbs. Voices add to the VR effect by "uhhing" and "ahhing". If the two visitors manage to stay in sync, they will have the Significant Personal Experience together.

Future Modules

Another of the great advances of the interactive future is the promise of hundreds of channels of TV and interactive TV coming into our homes. Once more the future becomes the present in the Playhouse. Stepping into the Home Entertainment Centre, the visitor can partake of the joys of interactive consumer culture. A wide variety of channels awaits. Of course, not everything in virtual reality is virtual, so abundant apparent choice does not mean abundant actual choice. The channels are all shopping channels, allowing visitors to purchase many delightful items with which to fill the Playhouse. You can also query the system and discover which of your neighbors has already purchased a particular item. And if your disdain for privacy knows no bounds, you may also view these items as they are used in your neighbors' homes. All from the privacy of your HEC!

The Technical Fine Print

The Playhouse runs on Macintosh computers with colour monitors (640 x 480). It was developed using SuperCard (version 1.6). Communication between the two environments is by means of Apple events and a LocalTalk network. The Hot-Date-A-Glove(tm), the navigation device, was laboriously constructed in our labs from a mouse, an oven mitt, and velcro. The Generic Sexual Analog Interface Device(tm) (Sex AID(tm)) was the product of a hallucination incurred after ingesting too much rich food and wine during a visit to France. The Sex AIDs are connected to the system using the Common Sense CNX by Radiant Technologies and a black box of our design.

Issues

In the last few years, as 3D modeling and VR technology has become more widely available, greater numbers of artists are experimenting with it. Over and over we hear criticisms that in these works the technical issues dominate over those of content. FISEA united people under the theme of the "art factor" to look at exactly this problem.

Object Realism

The prevailing aesthetic is realism, a realism characterized by, as Char Davies puts it, "objects in space". We have all seen examples of this: the landscape extends towards the horizon and plopped down upon it are houses, trees, hills, etc. Even in more surrealist images, the "grid" is the underlying structure, extending its lines out to form a plane upon which the objects may rest, the foundations of cyberspace. In this type of image, the space is created first. Sometimes this is done by explicitly drawing out the grid; other times the grid is implicit, forming the bottom of a vast container which will then be filled. After that, the objects are deposited within it. Why not let the objects themselves define the space, create the space? Let the space arise as relationship between the

objects rather than as container. Well, this is not so easy because the problem is more deeply rooted than we might imagine at the outset. Software packages include the embedded object paradigm, point-of-view.

The Object Ethic

Michael Benedikt, in his influential overview "Cyberspace: First Steps", gives this description of the imagery of cyberspace. "One must take what [Lanier] says as a direction, a tendency, a preference, for sensory richness and literalism in virtual worlds. Indeed, rather than try to say just how literal cyberspace needs to be to deserve the name...I suggest the following double strategy: (1) with all the technologies at hand, let us pursue establishing cyberspace as literally as possible: a multisensory, three-dimensional, involving, richly textured and nuanced virtual world converting oceans of abstract data and the intelligence of distant people into perceptually engaging, all-but-firsthand experience; but (2) let there be a sliding relationship between the symbolic and the literal, the first giving over to the second as technology and economics permit. Actually, better than 'giving over': let the literal include and organize the symbolic, so that in the end both modes can intertwine to make one virtual world, a world that, like this world, is richer for the combination." (p. 191) Compare Benedikt's first point with the following:

"What distinguishes oil painting from any other form of painting is its special ability to render the tangibility, the texture, the lustre, the solidity of what it depicts. It defines the real as that which you can put your hands on. Although its painted images are two-dimensional, its potential of illusionism is far greater than that of sculpture, for it can suggest objects possessing colour, texture and temperature, filling a space and, by implication, filling the entire world." (John Berger, "Ways of Seeing", pp.88-9)

John Berger suggests that oil painting was able to enshrine the object through its tactile qualities, was able to render palpable the possession of the object. More than that:

"The special qualities of oil painting lent themselves to a special system of conventions for representing the visible. The sum total of these conventions is the way of seeing invented by oil painting." (Ibid, p.109)

This "way of seeing" was developed further with the photo and the emergence of mass advertising aimed at the consumer market. No longer was the image to catalog the goods of the bourgeoisie, it now served to stimulate the dreams and pocketbooks of the consumer.

It is not hard to see that there is a direct continuation of this way of seeing in computer graphics: the prolific use of computer graphics in commercials and advertisements on TV and in print; Michael Benedikt's description of the march towards literalness in cyberspace above. The tools we use to construct cyberspace are embedded within this tradition and carry with them several hundred years of convention. Doing things differently is not easy.

"Each time a painter realized that he was dissatisfied with

the limited role of painting as a celebration of material property and of the status that accompanied it, he inevitably found himself struggling with the very language of his own art as understood by the tradition of his calling."

Understanding Berger's ideas aids us in seeing that a move away from photo-realism in computer graphics is more than a choice between aesthetic styles: it involves a fundamental questioning of the way we are taught to look at and represent the world. We began this discussion looking at space and how to fill it. Berger offers us another metaphor which might help us to understand the way the tools framed within this way of seeing shape the world. "It is usually said that oil painting in its frame is like an imaginary window open on to the world. This is roughly the tradition's own image of itself...We are arguing that if one studies the culture of the European oil painting as a whole, and if one leaves aside its own claims for itself, its model is not so much the framed window open on to the world as a safe let into the wall, a safe in which the visible has been deposited." (Ibid, p.109)

Artists and cheap/expensive technology

Technological change and the realities of the marketplace have created a situation where our tools are changing more rapidly than we can master them. As Simon Penny repeatedly pointed out at FISEA, no sooner have we learned a new software or hardware package than the upgrade comes out and we are forced to learn again. We are pushed on to this because there is an ingrained belief than we have to utilize only the latest processor, the fastest, most powerful hardware, and the most up-to-date software. As Penny points out, this creates an entirely new situation in art where the artist never moves beyond the transparency of his tools. But is this true if the artist opts out of the market, if the artist is for searching for a different way of seeing? At SIGGRAPH 90, where I was showing "The Glenn Gould Profile", a hypermedia piece I did with the Banff Center, many of the SIGGRAPH patrons turned away when they saw it was "only in black and white." Four years later I still use largely black and white images. Now, however, I throw in spots of colour here and there to overcome the resistance of the technophile diehards. The images are still not photo-realistic, but I have not heard any comments about them being "only in black and white."

I call The Playhouse a "very low tech, pseudo-immersive environment." I want to show that artists using very simple and basic technology can investigate issues which others investigate using much more than that. Two examples from FISEA: Carl Loeffler's Networked VR and Brenda Laurel's project at Banff:

Loeffler & networked VR

In the videotape he sent to FISEA, Carl Eugene Loeffler discussed the networked VR project which he is carrying out at Carnegie Mellon. Multiuser VRs using a client-server model demand very wide band-width for transmitting the changes in state of the system. This problem is overcome by sending complete copies of the environment to distant sights. Loeffler is able to create a shared VR space by sending only the updating information through the network. I won't go further into detail of Carl's work. He is eloquent enough speaking for

himself. This scheme of using local environments being updated via the network is the same method which I have used in "B*rbie's Virtual Playhouse". I conceived this independently, using Macintosh, LocalTalk, and Apple events, before I had heard of Carl's work at CMU.

While the technical solutions are of different scales and levels of complexity, many theoretical and philosophical issues involved here are the same. The budgets, however, differ by orders of magnitude. Small budgets do not mean artists can not investigate important issues.

Laurel: Two Hands and Cartesian Space

Brenda Laurel, reporting on the VR project she worked on at the Banff Centre during the summer of 1993, mentioned in passing that the project was one of the first to investigate the use of two hands in the interface and that the video would show that it moved away from cartesian space.

I will note in passing that both hands are used by the visitor in his or her exploration of "B*rbie's Virtual Playhouse." This was done to give the visitor a more involving tactile experience. Note as well that this equipment can be quickly adapted to right-handed or to left-handed visitors.

As for the second point, when we saw the tape, it was not clear what she meant by non-cartesian space, because from where we sat, the space in her VR environment looked suspiciously like the 3D space of other VR worlds. The difference was the use of Michael Naimark's work to reproduce environments taken from the Banff region, rather than building worlds synthesized in the same way as other VR systems.

If the difference between existing VR space and the work of Naimark, Laurel, et al was not apparent, might this be because local space tends to be cartesian? Once you are in VR space, flying this way or that, the experience of space will be similar whether the space is built by dropping cubes on the cow pasture of the cybergrid, or whether the space is built through Naimark's impressive algorithms.

Hypermedia works begin from a completely different pole. In "B*rbie's Virtual Playhouse", the space is both two dimensional and N-dimensional. Each screen has two dimensions, with line drawing perspective suggesting the third. But the changes from one screen to another, from one section of a room to another, are done using the visual effects available in SuperCard. In particular, movement from a view of one wall to the view of its neighbor are done through scrolling cards either left or right; Movement through a door is a dissolve. How many dimensions might that be?

Each screen becomes an object which is then connected to another screen (object). The choice of visual effect as well as the design of the screen (are we within the same space or have we moved to an entirely new one?) create the sense of overall space. In 3D space, objects have to be explicitly depicted in relationship to one another. In hypermedia, there are implicit relations between the objects which are filled by suggestion. Hypermedia, at its poetic and suggestive best, offers a fertile terrain for the exploration of new forms of space, space which does not need to be rendered into ever increasing numbers of

pixels per inch.

Gender

In a tangential discussion about Brenda's piece, the topic of gender arose. Rob Low, programmer from Interval Research who did much of the programming on the project, announced to an astonished audience that this work had solved the gender problem. He told us the video would verify this the next day. Let me backtrack for a moment. On the plane down to Minneapolis, I had a conversation about VR with a colleague who stated that VR would be interesting because we would be able to learn about other people. For instance, if her daughter began dating a black man, she would be able to go into VR, don a black character, and go into a black club and experience being black.

And I thought to myself, yes, and in this black club will be 150 other white people posing as blacks, perpetuating the stereotypes. At a FISEA panel where this issue arose, a participant recounted his experience playing "Habitat", a popular game in Japan. He was playing from California with the help of a Japanese translator. After two minutes, the translator began to laugh. One of the other players had responded "Who is the gaijan?" His "real" identity had been found out because of the nature of his moves and interventions in the virtual world. These two stories point out the complexities of issues of gender and identity in cyberspace.

In "B*rbie's Virtual Playhouse", the two characters are assigned identities by the system. This happens when the system boots up and after each sexual experience. The only way of knowing whether you are male or female prior to interacting with the other character is by looking at yourself in the mirror. Each local system randomly generates the new identity. The matchings can be female/make, male/male, or female/female. Regardless of the pairing, all options on using and exploring the system are open.

On the other hand, I do not believe it is possible for a woman to have a male experience or vice versa. I do not believe the Playhouse is gender-neutral. The area where the issues of gender became most interesting when the Playhouse was on display at SIGGRAPH was between the actual players. If two people were using the system, they knew the sex of the "other" player. Here the tension was between the on-screen representation and the knowledge of the sex of the person with whom you were interacting. Women in general did not react if they knew they were "in bed" with someone of the same sex. Most of the men did. As the week evolved, I began pushing the "performance" aspect of the piece in my role as barker, inviting the ladies & gentlemen of the audience up to participate, guiding them into place with my arm around their shoulders, my hand on their hand, gently squeezing the Sex AID to show them how it was done. This involvement on my part added another dimension to the piece.

Virtual Sex

I briefly touched upon the topic of gender above. I now want to look a little more closely at the issue of virtual sex. Needless to say, sex is a sensitive topic: it is political par excellence. Issues of sex/gender and pornography/eroticism are land mines dotting the post-modern landscape, threatening to

explode in the face of anyone who treads the ground without the lightest and most delicate of touches. As one visitor to SIGGRAPH (from outside of North America) said to me, "Americans are puritans with filthy minds."

The images in the "sex" scenes are all taken from ads. They show body parts, in black & white bitmaps, filling the screen. Knees, elbows, legs, arms, mouths, eyes, hair, hands, fingers... The bit-maps are very sensual, beautiful. The mixture of sounds and images is quite haunting.

I wanted to set up a situation where the interaction would be very silly but nonetheless very tactile, and couple it with images and sounds which were beautiful and suggestive, thereby playing with the tension inherent in the subject. I wanted visitors to recognize the absurdity of the gear they were putting on, and at the same time, to feel the pull and the power of the machine to generate an involving experience.

At the same time, I find the American fixation on technosex to be the logical outgrowth of a society which is techno-dependent. The US is a society in constant search of a technological fix to any problem, and we are now seeing computer technology in the service of the ultimate orgasm. This should not surprise us. American society lusts after its technology and that this lusting should be consumed...what could be more natural?

The Reality Ethic -- representation or structure
I often get the impression that there is a simple formula used to create "realistic" worlds in VR and computer animation: use "realistic" forms of representation. But what is misunderstood is that "real" does not mean "believable" and that "believable" is a function of coherence and structure, not mode of representation.

The coherence and believability of alternate worlds emerge from the coherence of the internal structure and organization of the work of which they are a part, not by means of photo-realistic or rendered representation of images nor reproduction of three-dimensional space. Works in other media, such as books or animated films, are able to create such worlds and use neither of the aforementioned techniques: books through the written word and many animated films through the most simple of images. If books and animated films can create alternate worlds without the use of three-dimensional space or even images, why are Virtual Realities caught in the 16th century?

Miscellaneous Questions

Other questions I posed to myself include the following: in immersive environments, how much of the effect is created by the actual process of putting on the equipment and being forced to act within it? In interactive environments, is the user the author of anything? What kinds of interactivity provide a genuine opportunity for creation? Would such environments be seen as "tools" rather than as art? Does giving readers choices while reading a text transform them into creators any more than giving them choices in elections makes them participants in political life?

< A Taxonomy of Computer Music >
Stephen Pope
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Editor's Notes--Computer Music Journal 18:1, Spring, 1994
The following text is scheduled to appear in Computer Music
Journal 18:1, Spring, 1994. I am circulating it now for
comments in the hope that several can be published
simultaneously with its appearance.

As mentioned in the Editor's Note of the previous two issues of
Computer Music Journal , which presented a rough bibliography
and diskography of the literature, respectively, there are
several sources for a possible taxonomy of computer music.
These include the tables of contents of the Proceedings of the
International Computer Music Conferences and the excellent
bibliography Computer Applications in Music, by Deta S. Davis.
Three of the central contributors to the field--Roger
Dannenberg, D. Gareth Loy, and Bruce Pennycook--have also at
various times prepared subject keyword lists or taxonomies.
These will all be presented and discussed below, and a new
multi-layered taxonomy of keywords will be proposed. Additions,
corrections, and commentaries are invited.

The top "layer" of Roger Dannenberg's informal taxonomy (which
he derived by hand from his library), presents perhaps the most
terse list of high-level categories for work in our field
(Dannenberg 1993). His items reflect the differences between
the different types of software systems used in computer music,
and include single topics for music understanding and music
composition. It is also interesting to note that he separates
human computer interaction from music representation and real-
time systems.

- Music understanding
- Signal processing
- Music representation
- Music composition
- Real-time systems
- Human computer interaction
- Acoustics
- Education
- Miscellaneous

Dannenberg's hierarchy continues to a finer level of detail,
with subtopics representing the most important keywords found
in any abstract in our literature. D. Gareth Loy derived a list
of keywords from his database of the Proceedings of the
International Computer Music Conferences as part of a report
for the board of the International Computer Music Association
(Loy 1993). Musical topics are more finely delineated in the
topics composition research, music languages and notation,
music theory and analysis, and performance research. Signal
processing is also differentiated from synthesis techniques,
and music printing from music notation.

- Acoustics and psychoacoustics
- Composition research
- Computer-aided music instruction

- Music languages and notation
- Music networking
- Music printing
- Music theory and analysis
- Performance interfaces
- Performance research
- Real-time interactive composition and performance systems
- Signal processing
- Studio report
- Synthesis hardware design
- Synthesis techniques
- Tutorials

The chapter outline of *Computer Applications in Music: A Bibliography* (in two volumes) by Deta S. Davis introduces a medium-grained topic list, which further subdivides the topics related to sound synthesis and generation, and aesthetics and composition (Davis 1988, 1992). The topic of digital audio appears and musicological applications are mentioned for the first time. Aesthetics is included, and composition separated from compositions, but sociology and performance practice are not present.

- Aesthetics
- Composition
- Compositions
- Computers in Music Education
- Conferences
- Digital audio
- Digital Signal Processing
- Electronic and Pipe organs
- Micro- and mini-computers
- MIDI
- Music industry
- Music printing and transcription
- Musical instruments
- Musicological and analytic applications
- Programming languages and software systems
- Psychology and psychoacoustics
- Reference, music library applications
- Sound generation hardware
- Sound generation software
- Sound synthesis techniques
- Sound generation in real time
- Spatial simulation and room acoustics
- Speech
- Studios
- General

As part of Bruce Pennycook's recent database of the ICMC Proceedings, the following comprehensive topic list emerged (Pennycook 1993). Several important but unclear issues come up here, including artificial intelligence and music, and the history of electroacoustic music. Diffusion is associated with sonorization (sonification), and interactive performance systems differentiated from real-time hardware and software (and from MIDI applications).

- Artificial intelligence in music
- Aesthetics, philosophy and criticism
- Acoustics of musical instruments and voice
- Audio analysis and re-synthesis

Audio hardware design
 Audio signal processing techniques
 Composition systems and techniques
 Diffusion, sonorization
 History of electroacoustic music
 Interactive performance systems
 Machine recognition of audio signals
 Machine recognition of music data
 MIDI applications
 Miscellaneous
 Music analysis
 Music data structures and representations
 Music education
 Music grammars
 Music and graphics
 Music languages
 Music printing
 Music workstations
 Optical music recognition
 Performance interfaces
 Psychoacoustics, perception, cognition
 Real-time hardware
 Real-time software
 Room acoustics
 Sound synthesis languages
 Sound synthesis methods
 Studio report

In preparing a hierarchical taxonomy from these lists, several main topics suggest themselves as the highest-level categories. The first level of the list should reflect the spectrum ranging from music theory, through psychology, to computer music engineering.

1. Music theory, composition, and performance
2. Musical acoustics, (psychoacoustics,) perception, and cognition
3. Musical (signal and event) representation and notation
4. Digital (control and sound) signal synthesis and processing
5. Hardware for computer music (instruments and tools)
6. Computers in music education, and computer music education
7. Computer music literature, history, and sources

Expanding this one more level to map the major topics from the other lists discussed above might result in an outline that subdivides these items as shown next.

1. Music theory, composition, and performance
 - 1.1. Music theory, sociology, and aesthetics
 - 1.2. Composition of electroacoustic music
 - 1.3. Algorithmic and computer-aided composition
 - 1.4. Performance situations and interfaces
2. Musical acoustics, psychoacoustics, perception, and cognition
 - 2.1. Musical acoustics and psychoacoustics
 - 2.2. Music perception and psychology
 - 2.3. Music understanding and cognition
3. Musical signal and event representation and notation
 - 3.1. Models of signals and events
 - 3.2. Musical event description languages

- 3.3. Musical signal description languages
- 3.4. Music notation and printing tools
- 4. Digital control and sound signal synthesis and processing
 - 4.1. Sound synthesis methods
 - 4.2. Time- and frequency-domain signal processing
 - 4.3. Sound spatialization and localization
 - 4.4. Machine recognition of signals and events
 - 4.5. Real-time processing and scheduling
 - 4.6. MIDI and control processing
- 5. Hardware support for computer music instruments and tools
 - 5.1. Hardware for DSP and digital audio
 - 5.2. Computer music workstations
 - 5.2. Input/Output devices for music
- 6. Computers in music education, and computer music education
 - 6.1. Computers in music education
 - 6.2. Computer music education
- 7. Computer music literature, history, and sources
 - 7.1. Bibliographies/diskographies
 - 7.2. Studio reports
 - 7.3. Descriptions of compositions
 - 7.4. History of electroacoustic music

The most extensive taxonomy includes almost all of the topics from all four authors' lists. Its "weighting" or "focus" reflects the average of four current views of the most important facets of the computer music literature.

- 1. Music theory, composition, and performance
 - 1.1. Music theory, sociology, and aesthetics
 - 1.1.1. Music theory and analysis
 - 1.1.2. Temperament and tuning systems
 - 1.1.3. New musical aesthetics and sociologies
 - 1.2. Composition of electroacoustic music
 - 1.2.1. Sound and composition models and notations
 - 1.2.2. Models of the composition and performance processes
 - 1.2.3. Sound design and processing
 - 1.2.4. Realization and production techniques
 - 1.2.5. "Aural rendering" or "sonification" of scientific data
 - 1.3. Algorithmic and computer-aided composition
 - 1.3.1. Compositional algorithms and languages
 - 1.3.2. Composition systems for score or sound synthesis
 - 1.3.3. Artificial Intelligence and composition
 - 1.4. Performance situations and interfaces
 - 1.4.1. Performing and conducting
 - 1.4.2. Gesture recognition and interfaces
 - 1.4.3. Score following in performance
 - 1.4.4. Expression representation and analysis
- 2. Musical acoustics, psychoacoustics, perception, and cognition
 - 2.1. Musical acoustics and psychoacoustics
 - 2.1.1. Acoustics of musical instruments and voice
 - 2.1.2. Psychoacoustics
 - 2.1.3. Room and spatial acoustics
 - 2.2. Music perception
 - 2.2.1. Physiology of hearing
 - 2.2.2. Pitch identification

- 2.2.3. Rhythm identification
 - 2.2.4. Timbre perception
 - 2.3. Music understanding and cognition
 - 2.3.1. Rhythm understanding
 - 2.3.2. Key and scale recognition
 - 2.3.3. Higher-level structures
- 3. Musical signal and event representation and notation
 - 3.1. Models of signals and events
 - 3.1.1. Language systems
 - 3.1.2. Encodings and file formats
 - 3.1.3. Graphical notation systems
 - 3.2. Musical event description languages
 - 3.2.1. Note-list formats
 - 3.2.2. Music input languages
 - 3.2.3. Music programming languages
 - 3.3. Musical signal description languages
 - 3.3.1. Signal models and descriptions
 - 3.3.2. Software synthesis languages
 - 3.4. Music notation and printing tools
 - 3.4.1. Transcription or performance
 - 3.4.2. Optical recognition of scores
- 4. Digital control and sound signal synthesis and processing
 - 4.1. Sound synthesis methods
 - 4.1.1. Additive sound synthesis methods
 - 4.1.2. Subtractive sound synthesis methods
 - 4.1.3. Nonlinear sound synthesis methods
 - 4.1.4. Physical models of acoustical systems
 - 4.1.4.X. Various types of physical models
 - 4.1.5. Other synthesis methods
 - 4.1.6. Analysis and resynthesis systems
 - 4.2. Time- and frequency-domain signal processing
 - 4.2.1. Software architecture
 - 4.2.2. Time domain model synthesis
 - 4.2.3. Frequency domain model synthesis
 - 4.2.4. Ad hoc synthesis techniques
 - 4.2.5. Effects and filters
 - 4.3. Sound spatialization and localization
 - 4.4. Machine recognition of signals and events
 - 4.5. Real-time processing and scheduling
 - 4.5.1. Real-time scheduling
 - 4.5.2. Real-time languages
 - 4.5.3. Hardware architectures
 - 4.6. MIDI and control processing
- 5. Hardware support for computer music
 - 5.1. Hardware for DSP and digital audio
 - 5.2. Computer music workstations
 - 5.2. Input/Output devices for music
- 6. Computers in music education and computer music education
 - 6.1. Computers in music education
 - 6.2. Computer music education
- 7. Computer music literature and sources
 - 7.1. Bibliographies/diskographies
 - 7.2. Studio reports
 - 7.3. Descriptions of compositions
 - 7.4. History of electroacoustic music

Readers are encouraged to comment on this proposal, and to use the numbering suggested above to reorganize the topics or add new ones. Please address your responses by electronic mail to "stp@CNMAT.Berkeley.edu"

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< A Perspective on a Computer Music Taxonomy >
 Craig Harris

Generations of practitioners and many years of specialization have been directed towards the creation of a viable field of computer music, representing enormous human resources. Devising a comprehensive taxonomy of computer music is problematic because of the tendency to view the totality as a sum of independent fields, and to express relationships and process in static representations. Stephen Pope's Computer Music Taxonomy reveals a great deal as a representation of a diverse constellation of fields and interests. In addition to his effort to view the music technology field in its entirety, Pope approaches the development of a taxonomy as a process.

A brief survey of the top levels of the Loy, Dannenberg, Davis and Pennycook topic lists reveals the wide scope of the computer music field. At this level it is easy to appreciate the characteristics that distinguish the categories. Distinction among aesthetics, hardware design, and representation flow naturally enough to create a reasonable system of classification and orientation. As one expands from the flat to the hierarchical representation, the connections among the fields and categories become more evident. The lattice of relationships in the second level of Pope's hierarchical model can be seen in just a few examples:

- A) 2.2 Music perception and Psychology, under Musical acoustics, psychoacoustics, perception, and cognition & 1.1 Music theory, sociology and aesthetics, under Music theory, composition and performance.
- B) 4.6 MIDI and control processing, under Digital control and sound signal synthesis and processing, & 3.2 Musical event description languages, under Musical signal and event representation and notation.
- C) 1.2 Composition of electroacoustic music, under Music theory, composition and performance & 7.3 Descriptions of compositions, under Computer music literature, history and sources.

Expansion to the third level invites traversing a variety of threads through the field, reinforcing the lattice of connections which cross structural divisions in the hierarchy. This suggests that one develop a global perspective which links New musical aesthetics and sociologies (1.1.3) with Timbre perception (2.2.4), Software synthesis languages (3.3.2) and Computers in music education (6.2), for none of these categories exist or evolve independently. One might further wonder what the taxonomy would look like if it were to be reconstructed on different terms. For example, it would be particularly revealing to examine category 4) Hardware for computer music (instruments and tools) as a function of

category 1) Music theory, composition and performance, and not as an independent topic, sharing the same degree position in the hierarchy. Or further, one might gain valuable insights by traversing the hierarchy in the other direction, viewing the flat top level as a reflection of categories within some broader perspective, perhaps Music, Creativity, Communication or Philosophy. This exercise is not designed to contest the specific categorization represented in this taxonomy, or to refute its relevance in the field. The intention is to demonstrate that a taxonomy which encapsulates complex issues in a static, linear structure does not offer the lattice of connectivity which is fundamental to developing a comprehensive understanding of the topics.

During this century in music Varese, Partch, Ligeti, Cage, Xenakis, Stockhausen and many others challenged world views - not simply musical views. Their work points toward a sonic realm and an expressive language that we have yet to address in a comprehensive and integrated fashion. The development of an historical perspective of computer music is particularly meaningful in the context of the evolution of music, incorporating the development of music's instruments and creative resources within the larger domain. The perspective gained reveals an evolution which links technological development directly with communication and human expression, leaving artifacts which embody the views of the society. An aesthetics or sociology subtopic in a hierarchical representation fails to establish the activity as a product of music making or self expression within the society. Performance practice, education, input & output, composition, and theoretical analysis do not exist independently, and cannot effectively be represented in isolation. Instrument development does not take place outside of consideration for compositional processes, performance practice and economics. The instruments and musical characteristics which evolve in a society are intricately integrated into its world view, a fact which becomes evident in exploring the music of different cultures and the instruments designed to create it. A comparison of the instruments and music of Bali, India and Europe provides support for this view. A world view permeates the hierarchy of the taxonomy.

I envision a top level in the Computer Music Taxonomy reflecting World View, and a multidimensional and configurable modeling resource which facilitates navigation among multiple world views. The taxonomy becomes a dynamic, interactive world view, supported by technological resources that reflect the orientation which governs the development and application of the technology supporting creative expression.

LEA readers with comments, suggestions, pointers to resources of the kind described, or an interest in working on the taxonomy are invited to respond to me at craig@well.sf.ca.us and to Stephen Pope at stp@CNMAT.Berkeley.edu.

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| PROFILES |
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< The Xerox PARC PAIR Project >
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RE: A NEW ARTIST IN RESIDENCE PROGRAM AT XEROX PARC

Xerox PARC is pleased to announce the creation of PAIR, the PARC Artist In Residence program, and to announce the selected artists for its first year. These artists will come to PARC and work directly with the scientists and researchers at the research laboratory. We hope that this program will create new art, new research and most importantly, an extended dialog between the two critical disciplines of art and science.

The PAIR model is to take artists who are already using science in their work and to "pair" them, one to one, with scientists and researchers who are working with similar technologies, using the shared tools as a common language. While the arts and sciences have much in common, there are also many differences that have made communication between the two fields difficult and all too rare. However, the recent explosion of science-based art, including computer music, interactive sculpture, real-time and processed video, multi-media, computer painting, virtual reality and hyper-text, provides a strong bridge for PAIR to use in forging new relationships between the arts and the sciences.

We feel that what is important is that the artists and researchers will be working directly with each other on ideas and projects of their own creation, based on their own interests and current work. Both the art and the research are intended to benefit by the personal and direct relationships established and through the participants discovering "new ways to learn" that such experience can provide. We hope that interesting projects will emerge during the residencies, and success will certainly be measured most profoundly in the future as the ideas transferred and created enter into the foundations of both the artist's and scientist's thinking and methodologies.

PARC is an internationally-known research facility with over 250 scientists working in fields that include anthropology, philosophy, psychology, perception, video, printing, linguistics, multimedia, information presentation, networks, computer science, computer language design, materials sciences, nano-technology, display technologies and crystallography to name but a few. PARC is credited with laying the foundations of the personal computer revolution including the desktop metaphor, the Ethernet, laser printing and CD-ROM technology. Situated on a hill overlooking the San Francisco Bay, its scientists and researchers create, use and study the ideas and

technologies of the future.

The artists for the first year of PAIR are all San Francisco Bay Area artists and were nominated by an external panel composed of artists, curators, art publishers and administrators from a diversity of areas, ranging from museums to alternative art spaces, from underground magazines to art schools. The artists were each brought to PARC to visit, talk and meet with researchers one on one. From these meetings we tried to find good "pairs", much like the old art of match making. With great difficulty we narrowed the twelve artists to four. These four artists will come to PARC for two month residencies which include offices and a stipend. The other eight artists are invited to PARC for short, approximately three day visits.

This first year is an experiment in itself from which we hope to learn much about the interaction of the arts and the sciences. The following are the four artists receiving a two month residency:

- * Judy Malloy, an interactive novelist who has published several novels on disks is paired with Pavel Curtis, a researcher working with social virtual realities and Cathy Marshall, a researcher studying hypertext and collaborations.
- * Steve Wilson, a computer and communications artist who sets up informational spaces is paired with Polle Zellweger, a researcher working with hypermedia and audio interfaces and Jock MacKinley a researcher working on three-dimensional representations of space.
- * Paul DeMarinis, a sound artist and sculptor who brings together basement invention and high-tech computation is paired with a group of scientists at PARC working with ubiquitous computing (the coordinator is Chris Kantarjiev).
- * The art team of Margret Crane and Jon Winet who work with high resolution photography combined with text in socially meaningful contexts is paired with Scott Minneman who is studying real-time video accessing, Dale MacDonald who is working on ultra-high resolution LCD displays and Julian Orr, an anthropologist who studies practices of workers in their work settings.

The following artists will come to PARC for short visits:

- * Synapse, a theatrical performance group is paired with with Brian Tramontana and Andrew Aronson who work on multi-media presentations at PARC.
- * Tim Perkis, a computer music composer working with algorithmic synthesis is paired with Ranjit Makkuni who is studying mixed media representations of Indian literature.
- * Randall Packer, a multi-media theater artist is paired with Todd Cass who studies automated image recognition.
- * Louis DeSoto, an installation artist is paired with Rich Gold who is studying the semiotics of stroke-based drawing.
- * Daniel Galvez, a muralist, is paired with Marshall Bern, a mathematician working with tessellation problems.
- * Rex Ray, a visual artist, is paired with Eric Bier a computer interface researcher.
- * The film and video team of Jean Finley and John Muse are paired with anthropologist Lucy Suchman.
- * Joel Slayton, performance and theatrical artist, is paired with Steve Harrison who studies group work practices.

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REVIEWS

< The Yamaha Morpheus VL-1 Synthesizer >
Richard Zvonar
Email: zvonar@well.sf.ca.us

Recently I paid a visit to the Sound Department at Yamaha to check out the new VL-1 keyboard. This instrument represents a breakthrough in electronic instrument design, being based on the physical modelling of acoustic instruments.

Detailed particulars of Yamaha's synthesis algorithm are now, and will continue to be, proprietary for reasons of economic necessity, but in essence the instrument generates convincing simulacra of acoustic instrument sounds by using a mathematical model of the way sound is produced and sustained within an acoustic resonator. This sort of work has been carried on for a number of years at research centers like IRCAM, CCRMA, and CNMAT and has been documented in Computer Music Journal. The waveguide research on which it is based was initiated by Julius O Smith, with refinements by Perry Cook.

The VL-1 is a duophonic keyboard instrument, designed for solo work. It is optimized for woodwind modelling, though there are some string and even percussion instrument sounds under development. I was very impressed by the saxophone, flute, and oboe sounds. The electric guitar was also quite good, though still a bit rough.

Up to 14 parameters may be controlled at once through MIDI, preferably with a breath controller (the new BC-2). Knowing which parameter to control with what kind of MIDI controller is a challenge which the Yamaha sound designers are currently grappling with, and it will not be a simple "plug and play" instrument for anyone. Aspiring VL-1 players might even have to practice, in order to tap the dynamic potential of the instrument!

One aspect of this type of sound production is the existence of truly natural sounding legato transients, hitherto unavailable on most electronic instruments (I define a "legato transient" as that transitional portion of the sound which occurs when one note gives way to another without a break, as in melodic legato playing). Players of acoustic instruments are quite familiar with this. Once the musical vibrations have been set into motion, the whole instrument develops a sort of acoustic "memory." New notes interact with those already sounding and there is a redistribution of energy, a shifting of resonance.

The downside of this new technology is its expense. The VL-1 is projected to cost \$6000, its 16 voice big brother around \$30,000. It will not be the DX7 of 1994, but it will no double have an enormous impact on our musical expectations.

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PUBLICATIONS

< Eternal Network: A Mail Art Anthology >
Chuck Welch

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"Eternal Network: A Mail Art Anthology" by Chuck Welch is to be published in Fall 1994 by University of Calgary Press. The 42 chapter, 350 page text includes an index, 147 illustrations and six major appendices including the largest extensive listing of underground mail art zines in existence. A thorough listing of nearly 100 international private and institutional mail art archives appears in another important appendice.

But what is mail art? Mail art is a paradox in the way it reverses traditional definitions of art; the mailbox and computer replace the museum, the address becomes the art, and the mailman brings home the avant-garde to mail artists in the form of correspondence art, e-mail art, artistamps, postcards, conceptual projects, and collaborations. "Eternal Network introduces readers to a lively exchange with international mail art networkers from five continents. The book include snail mail and e-mail addresses, fax, and telephone numbers for many active mail artists. Readers are invited to participate -- to corresponDANCE with global village artists who quickstep beyond establishment boundaries of art.

Among the forty-two distinguished contributors appearing in "Eternal Network" are New York City art critic Richard Kostelanetz; physicist, poet Bern Porter; Director of the Museum of Modern Art Library, Clive Phillpot; famed Fluxus artists Dick Higgins and Ken Friedman; University of Iowa art historian and archival director Estera Milman, and mail art patron Jean Brown who has collected the world's largest assemblage of mail art material now undergoing documentation at the Getty Center for the History of Art and the Humanities.

Edited by Chuck Welch, an active mail artist since 1978, "Eternal Network" makes an important first step towards introducing mail art to non-artists, artists, and academic scholars.

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ANNOUNCEMENTS

< Wired Magazine - Internet Update >

Wired Magazine has posted its back issues on a Gopher/Web Server: wired.com

Wired also has an "infobot" mail server. Send an e-mail message to infobot@wired.com with the message "get index" and it will return you instructions on how to receive articles from past issues via e-mail.

< New Voices, New Visions Competition >

Contact:

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New Voices, New Visions 1994 is a unique competition designed to encourage experimental work in the digital medium. The principal sponsors are Voyager, Wired, and Interval Research.

It is clear by now that the computer is at the heart of a profound shift in the way that humans express themselves. Unfortunately, given the financial risk and the conservative sources of funding, there is a strong tendency for published digital works to be rather "safe" in form and content. This is particularly distressing in a period in which the vocabulary of digital expression is being invented. For this reason, New Voices, New Visions is aimed at encouraging new experimental work, unburdened by the concerns of the marketplace.

The competition is calling for works on any subject, in any digital format. The emphasis will be on experimental work rather than finished "products." The jurors, each a well-regarded member of the arts community, will judge submissions on merit. New Voices, New Visions will be advertised extensively to art, film, and design students and to artists, musicians and writers. The competition will award three first prizes of \$5,000 each.

- o This is an open competition -- all valid entries will be considered.
- o Entries may be of any length, subject matter, format. Entries may run on Mac, Windows, Amiga, 3DO, Unix and other digital platforms.
- o Submissions are due by March 31, 1994 and should be delivered to Voyager by that date.
- o Winners will be announced during May 1994.
- o Prizes: 3 awards of merit will be given. Each award is \$5,000 cash.
- o Jury: the submissions will be judged by a panel of 7 jurors from the arts community.
- o Registration: Prospective entrants should register for New Voices, New Visions in order to receive information

about submitting entries, special offers on creating CD-ROMs for entries, and new developments.

o Rights: Entrants RETAIN all future publication rights -- no publication rights are granted or implied by submission of a work for judging.

Voyager is administering the competition. Register -- by fax, phone, e-mail, post -- with Voyager for more information. Conversations about New Visions, New Voices will be ongoing in the MuchoMedia conference on the WELL. Information will also be available in the Arts folder on the WELL's gopherspace. Use Gopher client software to get there on Internet via gopher.well.sf.ca.us.

< ON LOCATION - Site Specific Artworks in Liverpool City Centre >

26th January - 12th February 1994
Bluecoat Gallery
School Lane, Liverpool, L1 3BX
Tel: +44 51 709 5689
Fax: +44 51 707 0048

This project was organized by the Bluecoat Gallery in Liverpool and is funded by The Arts Council of Great Britain. The commissioned artists use parts of the city's fabric to create unusual and innovative artworks that alter or comment on the way we perceive the sites. Some of the commissions incorporate actual buildings, other comprise installations that rely on pedestrians. Some are relatively discreet, others highly public. All four are situated within a few minutes walk of the Bluecoat Arts centre, two of them taking place at night.

SUSAN COLLINS - "Litter"

Sound and computer-animated videoprojection onto Wood St., off Hanover St. Daily, except Sundays, from dusk onwards

JANET HODGSON - "I must learn to know my place"

Projection onto the Facade of the Bluecoat Arts Centre, School Lane. Daily, except Sundays, from dusk onwards

KEVIN LOGAN & LINDA COOKE - "Euroclinic"

Multimedia installation in shop premises accompanied by poster/leaflet campaign. Daily, at 7 Lord Street, except Sundays, from 10am to 6pm.

KATHERINE MOONAN - "Exercising Control"

Computer manipulated posterworks/installation. Heathfield Street pedestrian passage connecting Bold St. and Renshaw St.

< The Arts Dyslexia Trust - Call for Work >

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The Arts Dyslexia Trust is launching a major exhibition of work by dyslexic artists, designers, architects, engineers, and scientists (past and present) at the Mall Galleries, London, England, April 12th to 24th 1994

entitled: "IN THE MIND'S EYE--Where dyslexia may be an advantage"

Innovative thinkers in both the arts and sciences, we now know, have often had a talent for visual thinking, sometimes combined with poor verbal or numerical skills. It may still be a surprise, however, to discover that many of the world's greatest minds have been dyslexic.

"In the Mind's Eye" brings together the work of some of the world's best known artists and scientists--such as Leonardo da Vinci, Rodin and Einstein--with contemporary artists, designers, architects, engineers and scientists, whose talent for visual thinking may also, perhaps, spring from the same roots as their dyslexia.

The distinguished architect Sir Richard Rogers has pledged his support for the event and will be showing some of his work. International interest has already been engaged, and Thomas West, the widely acclaimed American author, will be giving talks and workshops in the Galleries during the exhibition on the importance and relevance of visual thinking to everybody in the computer age. Videos, films, and computer graphics by dyslexic designers will also be on show. The exhibition opens with a one day conference run by the Dyslexia Institute on the capacity of dyslexic minds for inventive thinking.

Closing date for submissions: 4th February 1994.

Submission details

Exhibition at the Mall Galleries, London, England, April 12th-24th, '94

The initial selection process will be exclusively from 35mm slides, photographic prints, or VHS format video. A4 photocopied sheets are acceptable for scientific works only. If the applicant is successful in the first stage of judging, he or she will be asked to bring in the actual work for the second selection.

Maximum number of works to be submitted: 6 (in slide or video form).

Submission fee: 7 British Pounds per work/ 3 British Pounds for students.

DATE of 1st Hand in: Friday 4th February 1994--by first post.

All postal correspondence must be clearly marked "In the Mind's Eye." Slides, etc., must be clearly labelled and accompanied by a completed submission form. Only in exceptional circumstances will works be accepted at this stage for exhibition. If your submission form is returned marked with a "D" (doubtful), the actual work will be required to enter the 2nd stage of judging. If you would like your slides/videos to be returned, please enclose a further s.a.e.

DATE of 2nd Hand in: Sunday 27th February 1994 (10 am-5 pm). Delivered by hand.

All submissions (and cheques made payable) to:
The Federation of British Artists, 17 Carlton House
Terrace, London SW1Y 5BD.

< Prix Ars Electronica Information >

The competition rules and submission form have been loaded
up on the file server for those of you who are interested
in participating in the competition. The following files
are available:

prix_ars_rules - the competition rules and description
prix_ars_form - the submission form for all categories

Deadline: February 28, 1994

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LEA
SUBMISSION
GUIDELINES
&
PAST ISSUES

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.

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select 2) Around MIT - Offices & Services/MIT Press.  
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select 1) Guidelines for Submission
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that directory for details.

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