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EDITORIAL
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< textuality, virtuality, technology >  
by Linda Carroli

Something is shifting in the field of electronic textuality. For a while, electronic writing seemed like a fairly consensual community with its ruminating rhetoric about non-linearity, linking and multimedia. Electronic writing and writers worked hard to differentiate itself and themselves from the world of print and literature. It's hard to identify exactly what the current shift is but there are allusions to a fragmentation which comes of expansion. I can see the expansion take shape through the proliferation of discussions, symposia and conferences (three major international conferences in the first half of 2002) as well as through an explosion of online writing from independent practitioners, students and collaborations.

This dynamic permits more particular, nomadic and singular critical inquiries into ideas about textuality, virtuality and technology. For example, a recent discussion on the [-empyre-] list about 'blogs' and 'vogs' was sustained for a several weeks. I approached this double issue of LEA with that perception of the field in mind. And here, I have invited artists, writers, researchers and academics who are investigating how new technologies, virtual environments and architectures meet, interact and mesh with a broad range of writing practices; what these meetings produce and what happens to textuality, virtuality and technology out of these meetings. I am indebted and grateful to the writers - in this issue, Mark Amerika, Adrian Miles and Rita Raley and in the next issue, Teri Hoskin, John Smith and Giselle Beiguelman - who have made this double issue of LEA possible and thank them all for their contributions. They responded to my call for contributions with verve, barely fazed by the impossibly tight deadline I had imposed. I also extend my warmest thanks to Nisar Keshvani for inviting me to be a guest editor.

Rita Raley addresses production environments such as Flash, Director and C++ builders which have facilitated the emergence of the continual replay loop as a formal feature of digital texts. She examines how new tools have made it possible for digital texts to move beyond the singular node-link mode of composition and how the loop has been incorporated as a theme, much like the link, the path, the map, and the stitch were incorporated by Storyspace and other earlier-generation hypertexts. Drawing particularly on the work of Dan Waber and M.D. Coverley, Raley investigates two components of the loop: recurrence, whereby the loop cycle does not achieve a perfect re-iteration but is instead altered with each sequence, and feedback, whereby the system and its environment interact and modify each other.

Mark Amerika introduces his recent projects - FILMTEXT and a visiting fellowship at RMIT, Melbourne - as well as the research

environment of university-based new media studies. He addresses an expanded concept of writing or 'writing cyberspace' in order to 'realign' the ways we think about technology and its relationship to arts education and arts research. As an extension to some of the questions raised in this paper, LEA also presents a dialogue between Mark Amerika and Adrian Miles who discuss, from their own academic contexts and perspectives, practice-based research and problem-based learning in new media.

While these essays do not present particular takes on a given theme in the way that an edited anthology might, there are many resonances between them. Key terms find themselves repeated, their inflections twitching like a live wire or nerve: circuit, inscription, power, hyper-, practice, research ... What has emerged as a subtext is an interrogation of research as practice and practice as research. For example, Amerika positions the trope of the artist-researcher as an embodiment of this while Raley explores the production environment as the basis for a research oriented practice through which to renegotiate electronic textuality.

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FEATURE
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< Writing Cyberspace: Notes on Nomadic Narrative, Net Art and Life Style Practice >  
by Mark Amerika

As I attempt to make sense of my recent investigations into digital narrative for cross-media platforms, I find myself drifting into psychogeographical border zones that will come to you as a set of fragments - digressions - or problematized states of being - sort of like when you fly from America to Australia and lose an entire day - somewhere - somehow - it just doesn't exist - and yet it does - and so I want to know where it is - WHAT it is - and how that relates to my thinking about cyberspace - about "writing cyberspace" the way I might think about "writing language" or "writing as digital arts practice" - how that non-place place that Mallarme speaks of when he says "Nothing will have taken place but the place itself" - quite literally links to these dreamy, "interactive states of 'being becoming something else'" - something unexpected yet something that won't go away - which is all somehow connected to my recent hire as a Professor in an ART department at a major US research university where it becomes part of my practice-based research initiative to investigate the hyperrhetorical ways one may want to put a network spin on this "place itself" that Mallarme speaks of and that I constantly try and capture via various apparatuses I have at my disposal.

I am also interested in how this expanded concept of writing or "writing cyberspace" signals a changing of the "garde" (as in avant-garde). One would have thought that some adventurous English Department would have initiated a Graduate Program in New Media Studies by now. But one would have been mistaken. Meanwhile, things move on, and it's becoming quite necessary now to realign the way we think about technology and its relationship to both arts education and arts research, or what I prefer to call, Life Style Practice. We also need to rethink "the vocation of the artist" as well as investigate terms like "nomadic narrative" - "net art" - "interactive cinema (beyond film)" - and "digital screen writing".

Some of the subjects being discussed in the evolving research initiative I'm developing at the University of Colorado (CU-Boulder) include digital thoughtography, realtime telepresence, progressive embodiment in VR architecture, ambient games, motion picture graphics, network installation, data visualization as poetics or codework, parapsychological and paranormal uses of telecommunications technology, desktop cinema, the history of multi-media art in relation to both computer science and arts practice, generative art, web publishing, distributed wireless narrative, net art and the exhibition context, surf-sample-manipulate, designwriting, database aesthetics, and a very intense, self-reflexive, investigation of practice-based research as creative process aka Life Style Practice. I'm also wondering about extensive mark-up language (not XML per se, but an alternative schema of ordering language via an intuitive process of invention that requires doing things differently, as in "taking risks" so as to not fall prey to the Gods of Money-Junk - of having WRITING do for me what Techne did for Aristotle - that is, using writing to invent a blur-like practice of artistic "doing" or "doing with" - whoever said you should learn to "do without" was wrong - it's time to "do with" - but your assignment, should you choose to accept it, is do what? And with what?

For example, save literature from itself? With new media technology?

Or how about:

To dream the impossible dream? With a theory of collage reconfigured as surf-sample-manipulate?

All of these new media and net art developments I've been experiencing over the last few years feel absolutely post-contemporary. It's like being on a rocket ship soaring through outer space discovering new worlds that the Apparatus has yet to capture in its Infinite Memory; yet also, at the same time, it feels very grounded in social space, as in creating a real-time social network that one immerses oneself in while embodying an identifiable difference whose story is always worth telling across various media platforms.

For example: FILMTEXT. [[link to filmtext.newmediacentre.com](http://filmtext.newmediacentre.com)]

With FILMTEXT, I have had this thing about desert landscapes as the primary locations for the projects visual source material. Yes, I will also remix into the narrative flow streaming, blur-like objects and dynamic color fields from scenes captured in the Tokyo nightlife, as just one example, but the main source or re-source, - image-reservoir is a nice, loaded term - comes from desert landscapes and - if possible - landscapes where other

films (known films, Hollywood films for that matter) have been shot. I am also open to the idea of working not only with digital video cameras but older, more symbolic technology which I will shoot on 35mm film, convert to digital, and sample/manipulate from there. In fact, believe it or not, for some of the future location shoots to take place in Monument Valley, a mere eight hours from my home in Colorado, I will be using the very same 35mm Victory camera that Robert Flaherty used to shoot *Nanook of the North* - we have the very same camera (it just needs a new lens).

So choosing a location for some of the visual source material is crucial. Picking up natural sounds in the areas where the shooting happens is also crucial. Again, not for the sake of capturing the so-called "truth of the moment" but as just more source-material. So that it's quite possible that some of the idle chatter picked up during a Tokyo night-shoot will be utterly manipulated so that it becomes part of the electronica soundtrack in one of the desert video loops which then gets expanded into a ten-minute full-on title track to the mp3 album which, because of its use of narrative vocals, becomes yet another digital narrative in the formatting mix - so FILMTEXT can be said to exist as a set of conceptual art works or digital narratives for cross-media platforms, and is presently an elaborate Motion Graphic Picture, an mp3 concept album, an experimental artist ebook, a museum installation, and a live performance. It's also becoming a kind of endless social event too, a Life Style Practice.

When I went to the Haleakala Crater, inside the big, dormant volcano atop of the Hawaiian island of Maui with its unreal desert landscape dotted with huge, multi-colored cindercones - and you have to understand that to get there you start at sea level and then drive straight up over 10,000 feet in less than two hours, making it the steepest climb of its kind - when I arrived there, I immediately knew that this would be where the opening shot of FILMTEXT took place. It's where I came to realize that I was not so much capturing a desert landscape for my remix methodology, but a digital landscape, and that the difference between the two would be one of the primary focuses of my investigations.

These so-called investigations, part of a practice-based research methodology that attempts to "play the work" while "writing cyberspace," is part of a process of invention, discovery and production that, in FILMTEXT, I call "Digital Thoughtography." In fact, I was already writing about the Digital Thoughtographer two weeks before going to Maui, The Digital Thoughtographer being the concept-character throughout FILMTEXT who becomes the apparatus, the seeing-thinking cyborg-narrator who streams hypertextual consciousness into the digital landscape - and now that I was standing before The Vision of the Haleakala Crater, this vast desert landscape with nothing but the beauty of its emptiness before me, I did what I had to do, which was go down into it and find the right place at the right time (keep in mind we are above the clouds and absolutely exposed to the whims of the sun) - to find the right place at the right time in real-time, to capture The Digital Thoughtographer as Source Material to be Remixed into the Nomadic Narrative Flow, the desert being an appropriate location for such loaded metaphors of contemporary thought (think of the work of Borges or Edmund Jabes' who asks us if our most recent thought is really our most recent desert bloom?).

As Baudriallard has said in a different context: "the image is no

longer given time to become an image." In this regard, I would also say net art was never given enough time to become net art and the artist too is no longer given enough time to become an artist.

"The world runs on Internet time," says Andy Grove, the CEO of Intel. It's like the chip inside your head is programmed for "destinarrativity" complete with "built-in obsolscence" and meanwhile you surf the web looking for more meaning - for meaning-potential.

The state of problematized being is erupting. This is the beautiful thing about evolving a digital culture out of lived reality (mutating codework). You program yourself to write yourself into being, to engage in an ongoing ungoing networked social experience with the Other, one that borders on becoming. But becoming what? Becoming research? Become a cyborg-narrator in whose sight we see the world anew?

And who is this mysterious Other the critics always point to as if it were someone or something different from what we know we need to become even if we aren't sure what that exactly is. Rimbaud - that poet-entrepreneur who would have made a killing in the dot.com glory days if only he were alive to experience it - told us that "to each being, several other lives were due." Imagine if he had access to IRC, MOO-space, email, or networked games. He would have never written his poetry and the seasons of hell he was so desperate to convey to the Other might have been lost to a series of virtual killings in virtual game space.

As Celine has said, "Life, also, is a fiction ... and biography is something one invents afterwards."

So that when I hit the red button on my digital video camera, people are said to be "captured" by my apparatus as it "eyeballs" the scene. Are they too part of the fiction? Or are they "real" actors performing as themselves in "realtime" and I just happen to be capturing them in action?

Is it their realtime biography synchronizing with my realtime autobiography or is it all pseudo-autobiography, a random interactive performance transmitted only for the apparatus that captures our consciousness for us?

I don't think about these things when I watch TV. But sometimes I do when experiencing the web.

Once the camera is on, it's all sex, lies and digital videotape anyway.

But what about when the camera is off?

What if I were to see myself as the Apparatus "turning on"?

Push my red button and activate my artificial intelligence and - well - I just might do anything.

The kino-eye apparatus "capturing" alien lightforms in streaming realtime.

This is what feels like to walk down Smith Street at twilight. To casually stroll down the pier at St Kilda at sunset.

This would be ME becoming-cinema. But there is no "me" - not in

the conventional sense of a self that will be what it will be.  
Now there is something else that drives my production cycles into  
"process heaven" - and this "something else" is: The Network.

WYSIWYG subjectivity: a black market in VR cache-flow.

"Here I am now, entertain me ..."

Who said that?

A voice from the grave?

Who is the "me" that wants to be entertained and that is being  
mocked all the while? Not me, I can hear everyone say. Then who?

You?

Think of AI [artificial intelligence] as gorgeous (beautiful,  
lovely, perfect) subjectivity. Virtual subjectivity.

Is that you?

"Not me" I can hear someone say.

What if we build in some "artificial stupidity"?

"Here I am now, entertain me ..."

Locating artificial stupidity would be like striking gold. Once  
it's firewired into my hard drive, the rhetorical flood of  
narrative information would fill to the brim and then it would  
all be just more virtual dream juice ready for spin doctoring.

Or what I call surf-sample-manipulate.

A strategy where the net artist, formerly a writer, surfs the web  
culture, samples data and then changes or manipulates that data  
to meet the specific needs of the narrative - of the  
pseudo-autobiographical work-in-progress your Network Story is  
un-bound to become.

You can use any data for this creative process. Internet, CDs,  
DVDs, books, magazines, overheard conversations, found material  
of all kinds.

For the Internet it would work on two fronts: one, the so-called  
"creative content," that is, the text, images, music, and  
graphics that are available to us, would be sampled from other  
online sources and digitally-manipulated so that they become  
"original" constructions that are immediately imported into the  
storyworld you are creating and, two: the so-called "source code"  
itself could be appropriated from other designs floating around  
the Net and eventually integrated into the screen's  
behind-the-scenes compositional structure. The great thing about  
the Net is that if you see something you like, whether that be  
"content" or "source code," many times you can just download the  
entire document and manipulate it to your needs.

Forget inspiration. That was for the "me" generation - ("I was  
inspired to write this poem") - they were worst than the lost  
generation - the literary Others who were bound by their supposed  
creative genius.

Net artists seem to be saying that "content" and "source code"

are one and the same thing, that it's all open source and as such, ready for remixing so that we can participate in collaborative acts of creative mindshare.

To take part in this remix methodology would first of all be an anti-aesthetic gesture, similar to the one Duchamp showed us with his Readymades, where he took found objects, gave them conceptually provocative titles, and reconfigured them in elitist art exhibition space - but I also see it as employing what Derrida might call a "signature-effect" - one that brands the chameleon-like creator as a kind of digital nomad [which again resonates with Rimbaud - the poet-cum-dot.comer who said that "to each being, several other lives were due."]

In my first work of online conceptual art, called Hypertextual Consciousness and created way back in 1995, I refer to this process as a kind of pseudo-autobiographical becoming, that is, a process by which the cyborg-narrators, teleporting themselves into cyberspace and accessing various fragments of everyday digital life, begin selecting whatever data they wish to download into their operating systems only to then filter it through a personalized, and often intuitive, collage-methodology that essentially does what it will with the data, integrating its binary code into their ongoing ungoing narrative discourse which, masquerading itself as a "work-in-progress," continually experiments with its ability to "manipulate" symbolic space in ways that will purge the interactive-artist of any need to conventionally portray their "subjectivity" as a product of the "me" generation and, instead, render into vision an interface of the object-oriented matrix of cultural tendencies now developing as a result of the convergence of network technology and (anti-)aesthetic practice.

The Electronic Word As Digital Rhetoric Becoming Animated  
Image/Text ...

... might be one way of looking at it.

Think of Digital Screenwriting - that is, Writing for the Web, as kind of Post-Film Cinematic Ecriture, as a chance to play with an inventive remix machine that is also a memory recording device, a multi-media network publishing platform, an exhibition space, a collaborative work zone, etc.

Let me show you a very basic example of what I mean:

I go to the web and pull a quote from Dziga Vertov, the Russian avant-garde filmmaker, from a site called Kino-Eye.com - the quote in full reads:

"Kino-Eye means the conquest of space, the visual linkage of people throughout the entire world based on the continuous exchange of visible fact [...] Kino-Eye is the possibility of seeing life processes in any temporal order or at any speed [...] Kino-Eye uses every possible means in montage, comparing and linking all points of the universe in any temporal order, breaking, when necessary, all the laws and conventions of film construction."

So then I remix that hot off the web and get:

"Kino-Eye means the conquest of space, the visual linkage of people throughout the entire world based on the continuous exchange of visible fact [...] Kino-Eye is the possibility of



seeing life processes as hypertextual consciousness moving at all speeds [...] Kino-Eye uses every possible means in reconfiguring the artist as a socially provocative apparatus operating in a telepresent environment, comparing and linking all points of the universe in an open source generated peer-to-peer network, breaking, when necessary, all the laws and conventions of reality construction."

Then I open a book by Vilem Flusser, called "Toward a Philosophy of Photography" and rip this from him:

"Apparatuses were invented to simulate specific thought processes. Only now (following the invention of the computer), and as it were with hindsight, is it becoming clear what kind of thought processes we are dealing with in the case of all apparatuses ... [a]ll apparatuses (not just computers) are calculating machines and in this sense are 'artificial intelligences', the camera included, even if their inventors were not able to account for this."

So now I do a remix of a manipulated Vertov/Flusser sent through a cinescripture filter I have invented called "digital thoughtography" and this what I come up with:

"Apparatuses capture space, make links to the Other via hypertextual consciousness, simulate specific thought processes as ways of seeing, process the social spaces of the artificial intelligentsia as it operates in a peer-to-peer (P2P) open source environment breaking all the laws and conventions of identity construction."

This all happens in real time. As a kind of intuitive writing practice that designs my story for me AS I create it - as I live it.

It feels like writing writing itself - that is, that I am letting the language speak itself, but with various filters turned on and tweaked for - let's call it - sound effect.

Sonic fictions screaming across the network ...

I like doing this because it reminds me how influenced I am by writing and art practices I have yet to fully expose myself to. Borges speaks of "Kafka and His Precursors" - that is, a space of mind where a writer will write into being those that came before him or her. It's as if you were there for the first time and only later see how others blew out similar ghost notes that led to Eureka-like discoveries. But at least you got there YOUR way, didn't you?

Keeping in this in mind, the net artist will ask:

Who writes You as you write yourself out into the big space of IN?

A digital screen writer must always take that question into account because no longer being "me" - and operating as a kind of digital thoughtographer in the network, means that I now have to give way to something else that's out there, to use it but also let it use whatever it is I supposedly create - which now feels more like a net art remix than a work of literature per se.

(c) Mark Amerika 2002

Mark Amerika has recently had two large-scale retrospectives of his digital artwork in Japan and Europe. He is the Publisher of Alt-X [<http://www.altx.com>], which he founded in 1993. He is also the author of two novels - The Kafka Chronicles and Sexual Blood - and two artist ebooks - How to be an Internet Artist and cinescripture.1. In the mid-Nineties, Amerika was a Creative Writing Fellow and Lecturer on Network Publishing and Hypertext at Brown University where he developed the GRAMMATRON project [<http://www.grammatron.com>], a multimedia narrative for network-distributed environments. Amerika's new cross-media narrative project and the third part of his new media trilogy is entitled FILMTEXT [<http://filmtext.newmediacentre.com>]. Amerika was recently appointed to the Fine Arts faculty at the University of Colorado in Boulder where he is developing an innovative curriculum in Digital Art. In 2002, he was a Visiting Fellow at the RMIT and the National University of Singapore.

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< Practice-Based Research, Digital Art and Problem-Based Learning: A Dialogue >  
by Adrian Miles and Mark Amerika

Adrian Miles: Can you give us a general introduction to the conceptual framework and preliminary investigations you are conducting at your TECHNE lab at CU-Boulder?

Mark Amerika: By approaching the Internet as a compositional and publication/exhibition medium, artist-researchers are positioning themselves to conduct a network of digital art practices. This network is formed within and between academic institutions in various locations around the world which are in the process of defining new research agendas. One of the main goals of the TECHNE practice-based research initiative at the University of Colorado at Boulder is to evolve an ongoing R&D platform focused on demonstrating the value of supporting the artist-researcher model as it relates to discovering new forms of knowledge embedded in the creation of digital art. It is generally assumed that these new forms of knowledge, packaged as interactive digital art, will alter the way we socially engage with each other as well as educate ourselves to perform in this dynamic, computer-mediated environment. The Internet is first and foremost a globally distributed network that enables various nodal points an opportunity to bring wider visibility to successful research discoveries made at various intervals throughout the creative process. These discoveries can be immediately published/exhibited on the Internet and, under the right conditions, attract a network of external links that will give the research work a more significant place in the larger attention-economy.

To this effect, we are positioning ourselves to take a leadership role as one of the first practice-based research initiatives at the state university level to reinvent arts education. TECHNE utilizes various new media technologies to create a collaborative learning environment for students hoping to transfer their creative and critical skills-set into the new media economy. These students, looking to participate in a highly technologized, social process of self-motivated personal discovery and artistic invention, are now realizing that the creative process involves both online networking and real-time group collaboration.

Adrian Miles: How did you come up with the name TECHNE?

Mark Amerika: The name TECHNE comes from the Greek use of the term techne to mean both art and technology, especially as it

relates to practice and application ("to make or do"). TECHNE enables faculty, students and research associates to utilize both highly specialized and easily accessible hardware and software applications to further demonstrate the value of building more interactive, digital art projects while critically analyzing their place in the world. Research projects are varied and investigate many contemporary subjects whose cultural implications bring to light the growing interdependency between the arts and sciences. The current environment of rapidly developing new media technologies enables committed researchers in both the arts and sciences to facilitate the discovery of new forms of knowledge. One of our recurring themes in developing the initiative is to proactively posit a new kind of research subject, that is, "the artist-researcher at play," one who continuously experiments with the Internet as an R&D platform for discovering new modes of life style practice.

Adrian Miles: What are some of the specific subjects being researched?

Mark Amerika: We have a very proactive, practice-based approach to web publishing, digital narrative, PDA art, wireless networking, artist ebooks, JAVA applet art, digital animation, telepresence, distributed network performance, dynamic hypertext language, biotechnology art, online games, motion picture graphics, mp3 concept albums, desktop cinema, data visualization, net art and the exhibition context, GUI art, 3-D Multi-User Environments, the history of multimedia art in relation to both computer science and art practice, generative art, programming or code art, database aesthetics and, finally, art research as process-oriented creative discovery.

Many of the digital art projects being researched at TECHNE require a team of student producers whose creative and critical skill-sets vary. By giving the students an opportunity to share their creative and critical strengths in a collaborative work environment while simultaneously enabling them to learn new skills from their peer network, TECHNE breaks away from the "individual artist as genius" model generally associated with art and creative writing programs. It focuses more on practice-based research and development skills that are more easily transferred to the rapidly transforming job market in both the high-tech industry and academia. Whereas TECHNE is not a graphic design factory that spews out scores of entry level computer design workers as a way to meet industry needs, the initiative does recognize that technically-proficient students with exceptional creative talent and critical decision making skills are likely to be more competitive once they graduate from our program. With this in mind, many of the creative research projects initiated at TECHNE are loosely tied to a collaborative, process-based learning (PBL) model that requires rigorous intellectual activity among the participants.

Which is something you have been developing at RMIT in the School of Applied Communication, yes?

Adrian Miles: Yes, although I refer to it as Problem Based Learning (PBL) with a process teaching spin. PBL is a form of teaching that emphasizes group work, self directed learning, real world problems, and is complemented by multiple forms of assessment. In PBL, broad and abstract problems are posed at the beginning of a course and students are empowered to develop the appropriate skills and practices to contextualise and respond to these problems. It is quite different to more traditional styles

of teaching where content is provided and then questions are asked - like when they have to read the text book to get to the sample problems at the end.

The problem, which obviously is rather central in PBL, should not have a straightforward or obvious answer, and the students should not have learnt enough to be able to answer the problem without research, thought, and hopefully collaborative endeavour. Generally students with, or without, their teacher work in groups to find out what they don't know, research this in appropriate ways, and contribute this to the group. This relies on an ongoing learning and reflecting process between staff and students.

Mark Amerika: How does this PBL model change pedagogy?

Adrian Miles: It is common in PBL for there to be several differences and difficulties experienced in relation to traditional teaching. Problems are introduced at the start of a course or a class, and students then work towards appropriate and productive outcomes. Most teaching and learning is group based, and it requires research with feedback and response so that the problems are able to be redefined and elaborated in response to the knowledges formed. Forms of assessment often need to change to reflect these different processes and outcomes, in particular what is now taught, and so assessed, is not just the demonstration of knowledge or expertise but the ability to identify what remains to be solved and strategies for resolving this.

Students who are adept and good 'book learners' regularly struggle or have difficulty in understanding what to do in PBL, and to begin with it is common to feel as if no learning is taking place.

Mark Amerika: But you tend to think the outcomes of PBL are positive?

Adrian Miles: We believe the collaborative and process based aspects of PBL strongly complement what we expect our graduates to be able to do, and the sorts of work and creative environments they will enter. It is a truism of the media in the digital age that collaborative skills form the basis of all activities, at all levels and that such skills are fundamental to working in networked environments. In addition I'm developing specific ways of dealing with this through a reworking of how we use digital tools. By using networked hypermedia, students are able to build media rich knowledge objects, and this helps make what they learn and know visible and available.

Mark Amerika: And these networked environments need to be foregrounded in the workshop and classroom?

Adrian Miles: Yes. In digital environments hierarchy tends to slip sideways, work is often multilinear, arguments open onto new arguments rather than centre on the necessity of conclusions and closure. Writing itself can have a different voice, and the 'formalism' of writing tends to soften. This is very much how we are taught to write content for electronic delivery (in any form of electronic delivery), though not how we are taught to assess, let alone how students are encouraged or allowed to write in these environments.

Furthermore, electronic writing allows images, sound, video and text to become parts of the writing space. This is, again, no

different to how we often teach where we routinely use video, spoken word, stills, illustration, readings, photographs, and quotes in our teaching. What is now possible, and quite different, is that these things can now all enter the space of student writing, so we can write with and around these things, rather than about them. Writing in this way generates different learning outcomes and different learning 'objects' - the things that students make that is the expression of their learning. You can teach students to write with these things to produce 'monuments' which is how I think of things like the traditional essay, or you can teach students to write with these things as part of an ongoing and open practice. I think the latter offers better learning, and complements what you're exploring in the TECHNE Lab. What do you think?

Mark Amerika: Absolutely. The new media lab environment is ideally suited to expanding the concept of writing so that it becomes a collaborative, multimedia investigation into digital design literacy and net communication. For example, with the launch of our student-built Histories of Internet Art: Fictions and Factions website, at <http://art.colorado.edu>, the area has begun critically assessing the new forms of artistic knowledge being developed for the new media environment. The students spend a considerable amount of time both in the lab and off-campus, mostly on their own initiative, innovating ways to develop robust, highly flexible, collaborative web environments that communicate our critical research findings to the Internet audience, particularly our national and international peer institutions whose evolving research agendas may complement our own.

(c) Adrian Miles & Mark Amerika 2002

Adrian Miles is Lecturer in Cinema and New Media, RMIT, Australia and Lecturer in New Media, University of Bergen, Norway. His recent and ongoing projects include Vog: Video Blog; RMIT Hypertext Project; and with Stuart Moulthrop, Bowerbird: Hypertext Theory Search Engine.  
[<http://hypertext.rmit.edu.au/adrian>]

Mark Amerika has recently had two large-scale retrospectives of his digital artwork in Japan and Europe. He is the Publisher of Alt-X [<http://www.altx.com>], which he founded in 1993. He is also the author of two novels - The Kafka Chronicles and Sexual Blood - and two artist ebooks - How to be an Internet Artist and cinescripture.1. In the mid-Nineties, Amerika was a Creative Writing Fellow and Lecturer on Network Publishing and Hypertext at Brown University where he developed the GRAMMATRON project [<http://www.grammatron.com>], a multimedia narrative for network-distributed environments. Amerika's new cross-media narrative project and the third part of his new media trilogy is entitled FILMTEXT [<http://filmtext.newmediacentre.com>]. Amerika was recently appointed to the Fine Arts faculty at the University of Colorado in Boulder where he is developing an innovative curriculum in Digital Art. In 2002, he was a Visiting Fellow at the RMIT and the National University of Singapore.

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< The Digital Loop: Feedback and Recurrence >  
by Rita Raley

```
while (condition)
{
  // execute statement 1
```

```
// execute statement 2
// insure that this loop is infinite
condition = true;
}
```

Production environments such as Flash, Director, and C++ builders have facilitated the emergence of the continual replay loop as a formal feature of digital texts. Motion-text genres such as QuickTime and Flash animations work with the replay loop as a constraint within the process of composition, and one result has been that the forms and styles of digital media writing have altered in relation to the different tools used to produce it.[ 1] As these tools have made it possible for digital texts to move beyond the singular node-link mode of composition, the loop has also been incorporated as both design element and thematic content, much like the link, the path, the map, and the stitch were incorporated by Storyspace and other earlier-generation hypertexts. Witness, for example, Dan Waber's recent 'Strings' [<http://www.vispo.com/guests/DanWaber/>] compilation, with Flash texts that play with the double meaning of string - code and thread - by using a visual representation of a piece of household string to form words in motion sequences that resemble a digital scroll. The strings metamorphose and fluidly move around the screen, forming words that are not stable but that have behind them a print frame, a fixed point of reference in the form of a title for each textual loop. The 'Strings' texts themselves therefore function with an interplay between the stable and the kinetic words. For example, the wonderfully apposite "Argument" uses the loop to present a repetitively cyclical and material struggle between the words "yes" and "no" as they are laterally and sequentially formed from visually represented and digital strings. The reiterative movement and mutations of the string-based words emphasizes the extent to which kineticism, along with sound, image, and word, is an integral data element within a digital text. The continual replay loop, then, is both structural and conceptual device. Further, in contrast to the static forms of the screen capture, the excerpted still, the singular node, or the singular button, image, or pixel, the continual replay loop is one of the hallmarks of digital textuality and digital art, circa 2002.[ 2] With this dichotomy in mind, we can investigate two components of the loop as it evolved from textual theme to design principle and the repeatedly executed statements of ActionScript, for example, came into use: recurrence, whereby the loop cycle does not achieve a perfect re-iteration but is instead altered with each sequence, and feedback, whereby the system and its environment interact and modify each other.

When digital media serve as both production and delivery platform, the question of physical textual boundaries comes to the fore. What, in other words, actually constitutes the text, particularly if each reading is different from the other and in a sense unrepeatable? Indexes, link menus, and site maps alike suggest that a digital text might have discernible borders and potentially be sequentially ordered, but these neither guarantee duplicable readings nor are they common to contemporary production environments. Without a repeatable and shared element, we could only have an absolutely singular work, which means that a digital text needs a degree of repeatability in order for it to function as a text. The loop serves as just such a repeatable element. Moreover, it highlights the extent to which the boundaries of a digital text can best be thought in terms of temporality: the time-based period in which both the reader-user and the system are performing.

While it does not primarily feature literal loops in the sense of programming statements, M.D. Coverley's early story 'Fibonacci's Daughter' [<http://califia.interspeed.net/Fibonacci/choice.htm>] - composed with animated gifs, basic HTML, and some javascript for a scrolling marquee effect in 1999 (pub. Feb/2000) - is an important precursor and illustrative example of a digital text that thematizes recurrence.[ 3] To enact this thematization, Coverley makes concentrated visual, thematic, and architectural use of spirals, which are, in this instance, a variation and modification of the loop. In its meditation on the spiral, 'Fibonacci' exhibits some of the formal and thematic concerns of digital textuality as they have emerged over the last decade: a striking preoccupation with the originary moment, frequency, reappearance, and boundaries of a textual "event." Coverley employs an epitaph as an internal epigraph that unifies these thematic concerns. The epitaph she cites, 'Eadem mutata resurgo' (Though changed I shall arise the same), is inscribed on the tombstone of Jacob Bernoulli, seventeenth-century Swiss pioneer of fluid dynamics and spatial mechanics; and it informs a dominant thematic of 'Fibonacci': that "life is a recurrence sequence," but that this recurrence is not symmetrical. That is, there is a mystical aspect to the recurrence insofar as the substance will be altered, perhaps even distorted, upon its reemergence. Thus, the idea of a recurrence sequence suggests repetition and temporal return, but with a difference. (One system of reference for this aspect of recurrence is the minimalist music of Steve Reich, Terry Riley, Philip Glass, and others.) Both Bernoulli's epitaph and the idea that life is a recurrence sequence suggest that there is no originary being; that is, appearance is only by reappearance. One (or "it," a text) arrives having already arrived. In its meta-critical reflection on the browsing of a digital text, 'Fibonacci' thematizes not just recurrence, but also frequency and probability, the likelihood that links, nodes, maps, and images will not just appear but reappear. It makes perfect sense, then, that the very end, so to speak, of 'Fibonacci' spirals back to a re-beginning, as do many basic-HTML hypertexts. This is not linguistically or structurally the same as an ActionScript loop, which will repeatedly execute under a "true" expression, but there are conceptual similarities. A temporary break, or end stop, which is both structural and temporal, can be reached when the cycle ends, but this serves to reinscribe the notion that the text begins when reading begins and ends when reading ceases - when, in other words, the performance of the reader-user and the system come to an end. (We might also look to the structure of the fractal and its self-similarity in order to consider further the endless repetition of loops, cycles, series or patterns, since fractals, too, begin and end without beginning and ending.)[ 4]

It follows that an epitaph would bring the structure of the loop and the thematic of recurrence to the fore because it is death that functions as a metaphor for the endpoint of a textual event and that brings a stop to the play of signification (or to the "flickering" of the signifier, as Katherine Hayles would suggest).[ 5] So, too, does it gesture toward the obliteration of a meta-system of reference, that is, to provide a way out before the meta-pattern or master code needs to be transmitted. As "hypertext theory" was emerging as a school and within the school, particularly in the Storyspace era of the mid 1990s, this theoretical and aesthetic project of engaging and disengaging the master code would have been attributable to the operative discourses of postmodernism.[ 6] The use of death as a metaphor

for closure in the hypertexts of this earlier generation opened up the possibility of apprehending a practical end to the seemingly labyrinthine structure of a digital text. Why else should Geoff Ryman's novel '253' [<http://www.ryman-novel.com>] end at the end of the line, in a London tube crash; Matthew Miller's 'Trip' [<http://raven.ubalt.edu/guests/trip>] link dying and ending ("We never die. It never ends," one character moans); Jane Yellowlees Douglas' *I have said nothing* (Eastgate) partly explore two spectacular car crashes in relation to narrative structure; Stuart Moulthrop's *Victory Garden* (Eastgate) implode with the dropping of a Gulf War bomb; or Michael Joyce's influential fiction and criticism open into scenes of death and decay?[ 7] With William Gibson's "Agridippa" as another precursor, more contemporary digital texts composed with ActionScript or JavaScript go beyond treating death as a metaphor for closure in order to perform their own self-erasure or self-destruction, to partially fail, close, or cancel themselves out without the aid of a self-infecting virus.[ 8] As just one example, Talan Memmott's 'Lexia to Perplexia' [[http://www.uiowa.edu/~iareview/tirweb/hypermedia/talan\\_memmot/index.html](http://www.uiowa.edu/~iareview/tirweb/hypermedia/talan_memmot/index.html)] beckons to the reader-user to elect to "pull the plug why don't you," a link that closes out the open window and necessitates a restart. Reader-user intervention, in other words, is required in order to bring a stop to a repeatedly executing loop, and an exit from the text constitutes its end.

What follows from the restart, a kind of loop in itself, is feedback, whereby system and environment are both altered as a result of their interaction.[ 9] Within a feedback loop, information is not simply circulated; rather, the environment affects the system (input) and, in turn, the system affects the environment (output). Both input and output are bound up in a loop, such that each in turn receives and then sends back information that transforms the other. There is a temporal division between the two, but each wields a material, performative, and generative power. Often generally discussed in terms of distortion, dissonance, and interruption, the feedback loop within the context of digital textuality might also be understood in terms of the interaction between the human operator and the machinic processor.[ 10] Digital textuality, then, has a feedback economy, wherein input and output are linked within a complex process of performance, "performance" here referring both to the actions of the computer and to the relationship between reader-user and screen. The process of interaction between operator and machine gains greater sophistication and visibility when it is inscribed into the digital text—a moment that loops into itself.

#### Notes

1 To browse examples of the motion-text genre in digital poetry, see 'Poems That Go' [<http://www.poemsthatgo.com>]

2 Lev Manovich briefly comments on the loop in relation to the still photograph as "the new default method to 'critique' media culture" in a recent series of Nettime postings entitled, "Generation Flash." "Generation Flash 1/3," April 9, 2002.

3 For a review of Coverley's text, see Jane Yellowlees Douglas, "Playing the Numbers: M.D. Coverley's 'Fibonacci's Daughter'," SIGWEB Newsletter 9:3 (October 2000). Reposted on 'Word Circuits' [[http://www.wordcircuits.com/comment/htlit\\_9.htm](http://www.wordcircuits.com/comment/htlit_9.htm)]

4 For a basic description of the structure of fractals, see Hans Lauwerier, "Fractals: Endlessly Repeated Geometrical Figures" (Princeton: Princeton UP, 1991); Harold M. Hastings and George Sugihara, "Fractals: A User's Guide for the Natural Sciences"



(New York: Oxford UP, 1993); Heinz-Otto Peitgen, Hartmut Jürgens, and Dietmar Saupe, "Chaos and Fractals: New Frontiers of Science" (New York: Springer-Verlag, 1992).

5 Hayles, "How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics" (Chicago: University of Chicago Press, 1999).

6 For example, one can look back to George Landow's institution-building labors at Brown and his influential attempts to fashion a theory of hypertextuality out of a few strands of contemporary continental philosophy.

7 See Michael Joyce, 'afternoon, a story' (Eastgate) and "Notes Toward an Unwritten Non-Linear Electronic Text," which opens in the contemplation of "a mausoleum of books," "awful makeshift morgues," "the union dead," "orphaned victims," and "the library mortuary" (173). Reprinted as "'The Ends of Print Culture' (a work in progress)," "Of Two Minds: Hypertext Pedagogy and Poetics" (Ann Arbor: University of Michigan Press, 1995).

8 Alan Liu's forthcoming book, "The Laws of Cool" (Stanford UP), concludes with an extended discussion of the aesthetics of destruction and virus art.

9 "Feedback" [<http://pespmc1.vub.ac.be/FEEDBACK.html>], Principia Cybernetica Web.

10 I have elsewhere written of performance with respect to digital textuality; see "Reveal Codes: Hypertext and Performance" [<http://muse.jhu.edu/journals/pmc/v012/12.1ralet.html>], "Postmodern Culture" 12:1 (September 2001).

(c) Rita Raley 2002

Rita Raley is Assistant Professor of English at the University of California, Santa Barbara, where she teaches courses in the digital humanities and global literary studies. She is completing work on her book, "Global English and the Academy", and also currently at work on a book about digital textuality. Her most recent article concerns hypertext and performance, and her ancillary research topics include codework, net.art, molecular computing, and the electronic empire.

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LEONARDO DIGITAL REVIEWS 2002.06
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On the Leonardo Digital Reviews website this month in there is a subtle but significant shift in the way that we are organising reviews. For the past five years at least we have categorised reviews under media headings. We felt this was no longer the best way to continue since it involved unnecessary navigation, hierarchised media implicitly and, perhaps most of all, masked the overview of the range of issues and topics that defined the Leonardo Digital Reviews project. Consequently from this month all reviews will be listed together regardless of media under the link "Reviews June 2000" and, as the summer unfolds, more months will be added to that list. and previous reviews will be transferred to the archive.

It is timely then that in this month's list we have three reviews from Mike Leggett of which two are CD Roms and one is a

book. Published together they carry a force and conviction about mediation and statement relative real political problems, in a way that would have been lost previously. Leggett's reviews foreground the dilemmas of the visualisation of political conflict that is most apparent in art, but no less present in the rhetoric of theoretical writing. Of the five sharp descriptive reviews by Roy Behrens two are of VHS tapes and three of books. His forte for summarising biographies in an extended paragraph is there to be enjoyed and, in the review carried below there is an echo of Leggett's observations apropos Virilio's book. Finally this month we are indebted to Amy Ione for her report on the 7th Annual Meeting of the International Society for the History of the Neurosciences. This too expands on the theme of the resonance of one field of enquiry on another and, if her report has a downside, it is that it amplifies for many of us a personal regret that it was not possible to attend such a rewarding event. Consequently we are doubly grateful to have not only a vital report but weblinks to explore some of the topics further. These and the other reviews this month, together with our archive, can be found at <http://mitpress.mit.edu/e-journals/Leonardo/ldr.html>

Michael Punt  
Editor in Chief  
Leonardo Digital Reviews  
July 2002

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In Leonardo Digital Reviews for July 2002

A Landscape of Events by Paul Virilio  
Reviewed by Mike Leggett

Of Shifting Shadows by Gita Hashemi (CD-ROM)  
Reviewed by Mike Leggett

For a Better World by Mathilde ter Heijne (CD-ROM)  
Reviewed by Mike Leggett

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by Felicity Ashbee  
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Swing in Beijing directed by Shui Bo Wang (VHS)  
Reviewed by Roy R. Behrens

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Reviewed by Roy R. Behrens

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Reviewed by Roy R. Behrens

Lawren Stewart Harris: A Painter's Progress  
by Andrew Hunter, et al.  
Reviewed by Roy R. Behrens

7th Annual Meeting of the International Society for the History  
of the Neurosciences (ISHN)  
(Conference)  
Reviewed by Amy Ione

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## A Landscape of Events

by Paul Virilio

Translated Julie Rose MIT Press, Cambridge, Mass. 2000

ISBN 0-262-72034-5

Original title: *Un paysage d'évenements*, Editions Galilee, Paris 1996

Reviewed by Mike Leggett

legart@ozemail.com.au

In this series of essays written between 1984 and 1996, (receded chronologically in the book), Paul Virilio is a witness of the times, or the landscape of events as they pass by in the electromagnetic spectrum of our collective telepresence.

Paul Carter observed at about the same time these commentaries were written that "We build in order to stabilise the ground, to provide ourselves with a secure place where we can stand and watch." As professor of the Ecole Speciale d'Architecture in Paris, Virilio continues his description, a *flanerie*, of the overtaking of Space by Time in the domain of the human environment both built and natural. The Secure place however, dominates his attentions, or as he would have it the attentions of the military-industrial complex trading today in the globalised industries of information.

In some ways each essay reads less as an extended aphorism and more as an anguished 'Letter to the Times' about the state of the world, relying a little too much on rhetoric and less on analysis. As vivid statements 'signalling through the flames' of contemporary turmoil and spectacle they most definitely are, commenting on war, terrorism, accidents, public disorder, the madhouse, mass murder and military history ("dematerialisation, depersonalisation and derealisation"). This virtual diorama is "the great circus of Time, of this landscape of events that God alone can contemplate." Well clearly, PV is right up there on the left-hand of the almighty, technology.

The section that deals with the anorthoscopic slit and the bankruptcy of "optical positivism", perception and belief takes its cue from the artist Marcel Odenbach's use of "total war" footage in his video game based on anorthoscopic optics *Die Distanz*. This installation plays with the persistence of vision phenomena and the ability of the mind to construct meaning from the scantiest of visual evidence, gathered in this case with a severely restricted field of view. Virilio's subjective responses are dutifully released - he enlarges the anorthoscopic slit into a metaphor aligned with The Wall when it fell in 1989, and "a commutation of existence between East and West". Such connections characteristically remind us that whatever the field of research, an engagement with real politik connects the inner spaces of personal endeavour with the public space of the economies of human survival.

The discriminating gaze of kinematic optics, (a recognised area of computer science it seems, presumably to assist in dealing with junk mail), is dealt with (chronologically) earlier, where information energy is the ability to observe in relativistic mode and thus distinguish between phenomena, retaining the essential from the ephemeral flow and thus informing the more usual kinetic and potential energies. "See pointy finger, click

mouse" would be one for sure but we are of course reminded that such interactivity was preceded by hand-to-hand combat. Well, at least we don't lose a hand or a leg in the state of telepresence, though equally the more paranoid may be led to suspect that someone, somewhere is writing lines of code for a game that will exact that very outcome. It's all a matter of what's at stake, and how we can stake it and according to Virilio's clarion call, we are being truly lulled. These entertaining thoughts would be better delivered via the listserv despatches from the front style, part of a dialogue even better - rather than anything up to sixteen years later via this elegantly designed book. On the one hand it suggests that Virilio's writings are a precursor to the listserv, indeed that his observations need to be recorded in the Age of Speed he has helped describe, they will be the kinematic optics to students of media enabling a wider comprehension of the telepresence of the everyday. On the other hand the publication offers that bitter-sweet feeling of commentary that has missed the engaged audience in flagrante, but has now found it again resting at home and willing to reminisce. It will strain however, to reach the non-believers and (updating Heraclitus ) the "'optical atheists', those baffled beings no longer capable of taking an interest in the shape of the world that is passing faster and faster...."

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#### Swing in Beijing

directed by Shui Bo Wang.

VHS video. Color, 2000. 73 minutes.

Available from First Run / Icarus Films, 32 Court Street, 21st Floor, Brooklyn NY 11201. Website:

<http://www.frif.com>.

Reviewed by Roy R. Behrens,  
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In the late 1950s, in the wake of the McCarthy Era, a silly joke was going around in which one person says to another, 'What do you think of Red China?' And the second person answers, 'Oh, I think it's fine, as long as it matches the table cloth.' So much has happened in the years since. Some of my oldest, finest friends grew up under Chiang Kai-shek; and yet I have also more recently worked with younger, extraordinary students from the People's Republic of China. It is impossible not to have mixed feelings about the current state of 'Red China'; it is so full of promise, yet overshadowed by the killings at Tiananmen Square - just as the U.S. must never forget the massacre at Wounded Knee, the McCarthy hearings, the Civil Rights Movement, and Kent State. China has a huge, diverse population. Even if it welcomes change, like all nations (including our own, where it was recently ordered that a benign 19th-century academic sculpture be covered from public view) it must to some extent restrict individual statement. This film is a wonderful present day look at the limits of artistic freedom in China. To what degree does China tolerate self-statement? Are political and social issues allowed as artistic subject matter? Is one permitted to create and exhibit experimental art forms? Is artwork censored? And if not explicitly, is it censored implicitly, through lack of funding or exhibition opportunities? Do Western art curators

also censor (or direct) Chinese art, in the sense of invariably favoring art that is provocative and offensive, regardless of quality? How can Chinese artists work to save the traditional values of their country? This is an incessantly interesting look at these vital issues, made up of a mixture of interviews with young Chinese artists, filmmakers, and musicians (who speak with surprising candor), along with clips from plays and films, art exhibitions, and visits to artists' studios. This film is of great value to American university students, not only as a way to learn about 'Red China,' but, more important, as a way to better understand the acts of their own government.

(Reprinted by permission from Ballast Quarterly Review 17, No. 3, Spring 2002.)

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7th Annual Meeting of the International Society for the History of the Neurosciences  
(ISHN) Los Angeles, California, USA 1 - 5 June 2002

Reviewed by Amy Ione  
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CA 94712 USA

ione@diatrobe.com

Contemporary projects frequently demonstrate that brain research at the end of the twentieth century has stimulated the artistic imagination. Although our excitement about current work tends to over-shadow historical examples, this was not the case at the 7th Annual Meeting of the International Society for the History of the Neurosciences (ISHN). Indeed one of the most compelling features of the conference was the degree to which combinations of art, science, and technology were simply assumed. This was immediately evident during the opening reception, held in the Rare Book Room of the History and Special Collections Division, Louise M. Darling Biomedical Library at UCLA. A special exhibit was set up and included (among other things) Hideomi Tuge's study, An atlas of the brain of a pianist, Chiyo Tuge (1908-1969), an 1880 anatomical wax model of the left side of the head and neck in dissection, and Percival Bailey's copy of the Edwin Smith Surgical papyrus. Now treated as a 'work of art,' due to its value and significance, the unknown author of the papyrus, a surgeon, systematically describes the examination, diagnosis, and feasibility of treatment for 48 cases. Several of these cases discuss the brain, meninges (coverings of the brain), spinal cord, and cerebrospinal fluid for the first time in recorded history. Generally regarded as the first record of historical attempts to understand connections between the brain and the human body, the papyrus' empirical approach to the problems under investigation has been studied extensively. As a later neurologist, it is perhaps not surprising that Percival Bailey owned a copy this document containing the first written reference to any part of the brain, in this case the cortex. Interestingly, the Edwin Smith papyrus is also a copied document. Usually it is dated to about 1700 BCE, and said to be a copy of a much older surgical treatise dating back to the pyramid age of the Old Kingdom (about 2686-2181 BCE).

Stanley Finger's fascinating paper titled "The Power of a Musical Instrument: Franklin, the Mozarts, Mesmer and the Glass Armonica" was particularly noteworthy, as was the counterpoint

demonstration-concert of the Glass Armonica by William Wilde Zeitler that followed it. As Finger explained, the playing of glass has a long history. Early Pythagorians experimented with glass bowls filled with increasing quantities of water, and the history of the East Indian 'Jal Tarang' (a set of tuned glass or porcelain bowls struck with mallets) similarly illustrates a long interest in the playing of music with glass bowls filled with increasing quantities of water. Benjamin Franklin's (1706-1790) contributions to the playing of glass are not as well known. Franklin, an inventor who was keenly interested in music, brought his extensive knowledge to the problem of how to eliminate water tuning and constant evaporation from the playing of glass bowls. His solution, the elegant glass armonica, eliminated water tuning by having each glass made with the correct size and thickness to give the desired pitch without being filled with any water. In addition, Franklin made the set of glasses more compact and playable by nesting them inside each other, mounted on a spindle which was turned by a foot treadle. Franklin claimed the glass armonica was his most satisfying invention, yet history shows he also contributed to its demise.

Briefly, as Finger explained, in its prime, Wolfgang Mozart composed to the glass armonica and Franz Anton Mesmer integrated the music into his séances. Eventually, Mesmer's claim that this music could promote healing by propagating a mystical fluid that he called animal magnetism throughout the body raised questions about the instrument's sweet sound. It seems Benjamin Franklin was included on a panel of respected scientists who examined Mesmer's claims and their rejection of these claims discredited mesmerism. Ironically, when Franklin debunked Mesmer's claims he also was a key player in creating the environment that led to the instrument's long association with madness.

Zeitler, a classically trained musician, quickly brought this story to life. His informal presentation began with a few compositions and then mixed audience questions with musical pieces (including his own compositions). The ensuing discussion touched on everything from the 'feel' of the instrument when playing to the physics of the pitch. During this stimulating discussion we learned that Zeitler built his own instrument (at a cost of about \$13,000) and needed to teach himself to play since the glass armonica is far from the musical mainstream today.

Also of note was the session held at the Getty Museum. This year the scholar theme at the Getty is "Frames of Viewing: Perception, Experience, Judgment," with the goal of opening "a dialogue between different approaches to perception: the historical, psychological, and physiological." Larry Kruger, a Getty scholar and a research professor of neurobiology in the School of Medicine of the UCLA Medical Center, Los Angeles, California began the session with an examination of the impact of quantification in physiological science and the birth of photography. Frances Terpak, of the Getty, then walked us through the recent "Devices of Wonder: From the World in a Box to Images on a Screen" show. This exhibition clustered together optical devices, scientific instruments, rare natural history books, zoological, botanical, and mineral specimens, trompe l'oeil paintings, games, toys, prints, ephemera, and even a 17th-century Wunderkabinett that unfurled its rich collection of naturae and artificia. As Terpak explained, fascinating and difficult to classify cultural material demonstrated how wondrous devices-existing at the interface between art and science-reflected, refracted, diminished,

magnified, stretched, dissolved, projected, and animated objects to reveal how an enhanced perception occasioned new forms of consciousness in different historical moments.

Genevive Aubert, the third speaker, discussed "Photography and cinematography before 1914: The neurosciences discover multimedia." Impressively outlining how the use of film came to be a part of neuroanatomical and neurophysiological studies, Aubert explained that, at the beginning of the twentieth century, a few pioneers such as Van Gehuchten in Europe and Weisenburg in America assembled the first collections of motion pictures of neurological patients. These films allowed patient conditions to be documented over time and aided classroom education. Christopher G. Goetz's paper on "Historical cinematographic documents in neurology" further developed this topic. Introducing early film documents on neurological diseases from the archives of the American Academy of Neurology, the Movement Disorder Society, and a number of private collections, this paper acquainted the audience with additional information about how film documented neurological conditions and captured diseases as diverse as post-encephalitic parkinsonism, locomotor ataxia, and numerous movement disorders. What was most fascinating about this paper was that the documents presented insights into the creative methods of early neurologists and showed how carefully they recorded the clinical signs of many disorders that are no longer regularly seen. In addition, his presentation showed that modern technology now allows field investigators to document neurological disorders worldwide and thus this information is no longer confined to isolated geographical regions. The final paper in this session was "Brains, bodies, and mad scientists: Hollywood does neuroscience" by Sheryl Ginn. Introducing clips from *The Lady and the Monster* (directed by Eric von Stroheim, 1944), *Fiend without a Face*, filmed in 1958 and directed by Arthur Crabtree, and other genre films, Ginn exposed the distorted 'scientific' information the general public receives from horror films, and used this genre to convincingly illustrate it is not surprising that scientific literacy in America is considered so abysmal.

A short review cannot do justice to this excellent conference. Session topics were far-reaching and the high quality sessions included papers on Early Neuroscience: Chinese, Arabic and Islamic Medicine; The Politics of Science; and key figures in historical neurology (e.g., Hughlings Jackson and Santiago Ramon y Cajal). Within this context, it was refreshing to see the ease with which the organizers, speakers, and attendees integrated art and technological innovations with the history of neuroscience. Indeed I find it is difficult to offer constructive criticism. To be sure, I was disappointed that the Getty session did not include discussion of eye/brain connections, but this is really a minor point given that the session certainly was in step with the thrust of the event. I would urge those interested in historical connections between art and neurology to look at the program (<http://www.ishn.org/>), and at Zeitler's Glass Armonica webpage (<http://www.glassarmonica.com/>).

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ABSTRACTS

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MARK BEDAU: The Scientific and Philosophical Scope of Artificial Life

ABSTRACT

The new interdisciplinary science of ALife has had a connection with the arts from its inception. This article provides an overview of ALife, reviews its key scientific challenges and discusses its philosophical implications. It ends with a few words about the implications of ALife for the arts.

ORON CATTI and IONAT ZURR: Growing Semi-Living Sculptures: The Tissue Culture and Art Project

ABSTRACT

Tissue engineering promises to replace and repair body organs but has largely been overlooked for artistic purposes. In the last 6 years, the authors have grown tissue sculptures, "semi-living objects," by culturing cells on artificial scaffolds. The goal of this work is to culture and sustain for long periods tissue constructs of varying geometrical complexity and size, and by that process to create a new artistic palette to focus attention on and challenge perceptions regarding the utilization of new biological knowledge.

PAUL A. FISHWICK: Aesthetic Programming: Crafting Personalized Software

ABSTRACT

Marrying traditional methods of computer programming with an artistic temperament allows the birth of a new phenomenon: the aesthetic program. The work of the author and his students builds on visual approaches in programming as well as in software modeling, leading toward a gradual evolution from program to model. The need for the aesthetic model is increased with the importance of personalized, individually tailored media, as found

with web-based style sheets and the economic movement termed "mass customization." The author and his students have formulated the rube Project methodology around the use of 3D web-based virtual-world model construction. Initial results suggest that these models are artistic, while containing symbolism and concise metaphoric mapping sufficient to be executable on a computer.

ALVARO MORENO: Artificial Life and Philosophy

ABSTRACT

Artificial Life is developing into a new type of discipline, based on computational construction as its main tool for exploring and producing a science of life "as it could be." In this area of research, the generation of complex virtual systems, in place of the traditional empirical domain, has become the actual object of theory. This entails a profound change in the traditional relationship between ontological, epistemological and methodological levels of analysis, which forces us to reconsider the differences apparently firmly established between science and philosophy. Even if the frontiers between these two kinds of knowledge do not completely disappear, new, dynamic, complex, technologically mediated interactions are being developed between them.

WARREN SACK: What Does a Very Large-Scale Conversation Look Like? Artificial Dialectics and the Graphical Summarization of Large Volumes of E-Mail

ABSTRACT

E-mail-based conversations between thousands of people - very large-scale conversations (VLSCs) - now take place in a variety of on-line public spaces such as Usenet newsgroups and large listservs. This article describes the author's prototype Conversation Map system, which can automatically analyze and graphically summarize thousands of e-mail messages exchanged in VLSCs. Example conversation maps of nine VLSCs are presented. Finally, the sociolinguistic analysis performed by the Conversation Map is discussed as a form of artificial dialectics and the graphical summaries produced by the system are considered as potential common ground between participants in a VLSC. "Free speech" can mean not only face-to-face communication, but also expression embodied in the media of newspapers, books, television, film and so forth. Many of these media constitute public "spaces." With the introduction of each new public space, the theories and practices of "speech" and "conversation" are affected and extended. This article concerns a philosophical study of and artistic-design approach to some of the new, electronic, public spaces of the Internet and the forms of "speech," "conversation" and dialectics practiced in these new spaces.

ARNAUD SANTOLINI, AGNÉS DANIS, CHARLES TIJUS, SfbASTIEN  
POITRENAUD: Applying Galois Lattices to the Interactions of the Virgin and Child in Bellini's Paintings

ABSTRACT

We discuss in our work a method for the semantic description and analysis of figure paintings. Our method consists in the construction of a Galois lattice, which is a hierarchy of categories, and in the use of current theories of categorization in cognitive psychology and of mother-child interaction in

developmental psychology. We have applied this method to a sample of 98 pictorial representations of the Virgin and Child attributed to Giovanni Bellini (1426-1516).

Coding mother-infant interaction, we find Fogel's concept of "frame" appropriate for defining interaction units as co-regulated patterns in specific contexts: for instance, the social frame depicts mutual attachment behaviors and orientation of the subjects toward each other. For dyadic relations (within the dyad alone), we coded: (1) the category of attachment, related to affective sharing and proximity-seeking (we distinguished three levels of attachment by considering mutuality of gaze, smiling, proximity and manual contact; (2) conflict of intention (for instance: autonomy of the Child versus dependence on the Virgin); and (3) scaffolding (the Virgin helps the Child to do what he cannot do by himself, for instance to keep upright or to walk). In the extra-dyadic situation (that of the dyad interacting with an object), we distinguished: (1) joint action; (2) offering; (3) request of attention (via the object); and (4) designation (or "proto-declarative intention": the Child shows an object to his mother).

STEVEN SCHKOLNE: Drawing with the Hand in Free Space: Creating 3D Shapes with Gesture in a Semi-Immersive Environment

ABSTRACT

This article presents a new medium in which organic surfaces are drawn in 3D space with the hand. Special interface hardware includes a head-tracked stereoscopic display and sensors that track the body and handheld tools, allowing the artist to share the space of the artwork. Additional tools move and deform the shape. This method provides a fluid, unstructured access to three dimensions, ideal for quick, spontaneous ideation and investigation of complex structures.

PHOEBE SENGERS: Schizophrenia and Narrative in Artificial Agents

ABSTRACT

Artificial-agent technology has become commonplace in technical research from computer graphics to interface design and in popular culture through the Web and computer games. On the one hand, the population of the Web and our PCs with characters who reflect us can be seen as a humanization of a previously purely mechanical interface. On the other hand, the mechanization of subjectivity carries the danger of simply reducing the human to the machine. The author argues that predominant artificial intelligence (AI) approaches to modeling agents are based on an erasure of subjectivity analogous to that which appears when people are subjected to institutionalization. The result is agent behavior that is fragmented, depersonalized, lifeless and incomprehensible. Approaching the problem using a hybrid of critical theory and AI agent technology, the author argues that agent behavior should be narratively understandable; she presents a new agent architecture that structures behavior to be comprehensible as narrative.

EDWARD A. SHANKEN: Art in the Information Age: Technology and Conceptual Art

ABSTRACT

Art historians have generally drawn sharp distinctions

between conceptual art and art-and-technology. This essay reexamines the interrelationship of these tendencies as they developed in the 1960s, focusing on the art criticism of Jack Burnham and the artists included in the Software exhibition that he curated. The historicization of these practices as distinct artistic categories is examined. By interpreting conceptual art and art-and-technology as reflections and constituents of broad cultural transformations during the information age, the author concludes that the two tendencies share important similarities, and that this common ground offers useful insights into late--20th-century art.

SUSAN A.J. STUART and CHRIS DOBBYN: A Kantian Prescription for Artificial Conscious Experience

ABSTRACT

Research in artificial intelligence, artificial life and cognitive science has not yet provided answers to any of the most perplexing questions about the mind, such as the nature of consciousness or of the self; in this article the authors make a suggestion for a new approach. They begin by setting their project in the broader cognitive science context and argue that little recent research adequately addresses the question of what are the necessary requirements for conscious experience to be possible. Kant addresses this question in his transcendental psychology, and although Kant's work is now over 200 years old the authors believe his approach is worthy of re-examination in the current debate about the mind.

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ISAST NEWS
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< ArtSci2002: New Dimensions in Collaboration >

Leonardo/ISAST is pleased to announce that it is collaborating with Art and Science Collaborations Inc. (ASCI) of New York on the ArtSci 2002 Symposium, to be held 6-8 December, 2002. (Although the deadline for proposals was 1 July, 2002, we enclose the attached information for those who are still interested.)

ASCI, <<http://www.asci.org>> in partnership with the American Museum of Natural History <<http://www.amnh.org>> and Continuing Education & Public Programs at the Graduate Center <<http://web.gc.cuny.edu/cepp/>> of the City University of New York, announce an open call for proposals for:

ArtSci2002: New Dimensions in Collaboration, 6-8 December, 2002 at the American Museum of Natural History and the CUNY Graduate Center, New York, NY.

Laser beams and superstrings, generative systems and AI, X-rays and MRIs. From the macro to the micro, from the everyday to the exceptional, the legacy of Albert Einstein permeates this century through the tools we use, the research being conducted in numerous fields and the continuing search for our place in the cosmos. Alongside scientists, technologists and humanists, artists have probed and responded to the post-Einsteinian

landscape. From installations that seem to react to the pull of invisible forces to the altered landscapes and mindscapes of VR, artists continue to push the limits of available technology, stretching and questioning our notions of perception, dimension and time.

How are artists and scientists exploring this legacy, not as individuals, but through "art-sci" collaborative projects? In this fourth international art-sci symposium organized by ASCI, we will continue to highlight exemplary models of art-sci collaboration while providing an open forum for dialogue about current art-science practice and interdisciplinary collaboration in general. We anticipate that there will be projects about art-in-space or even particle physics, as well as those that explore the body's inner workings via MRI, scanning electron microscopy and other imaging devices. We also hope to showcase new models of interdisciplinary art-sci curriculums.

In addition to the keynote address and art-sci presentations, extended breakout sessions and workshops will provide symposium participants with the opportunity to learn about and share their ideas about best practices, practical solutions, new tools for collaboration and new initiatives. At ArtSci2001, breakout sessions covered topics as varied as the issues involved in collaborating via the Internet; institutional models of hybrid spaces for art-sci research; and what the independent commercial possibilities for the products of art-sci collaborations might be.

ArtSci2002 will, as always, be an open forum for people from many disciplines: artists, scientists, technologists, humanists, educators, philosophers, theorists and anyone interested in the creative possibilities that arise when barriers are removed. During pre-registration, we will be creating an online listing of all attendees (linking to a URL about their work) to demonstrate the talent and diversity of event participants. The proceedings will be documented on ASCI's website <[www.asci.org](http://www.asci.org)> and via a post-event CD-ROM. ArtSci2001 is being webcast at: <[www.asci.org/ArtSci2001](http://www.asci.org/ArtSci2001)>.

"A storm broke loose in my mind" - Albert Einstein

The American Museum of Natural History in New York will open a major 6-month exhibition, Einstein, in mid-November. Our symposium's art-sci team presentations this year will reflect the impact of his legacy. Also, our keynote address and a special reception with the museum's research scientists (over 200) and ArtSci2002 attendees will be held at the museum (more details later).

ASCI (Art & Science Collaborations, Inc) <<http://www.asci.org>> is a 13-year old New York based non-profit organization producing symposia, exhibitions and resource tools for nurturing the intersection of art, science, technology and the humanities.

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< Nouveau sur le site Abraham Palatnik  
/ New on the Abraham Palatnik website >

"Abraham Palatnik," par l'historienne d'art br^silienne, Aracy

Amaral: <<http://www.olats.org/pionniers/pp/palatnik/amaral.shtml>>  
(Texte en portugais/Text in Portuguese only)

"Abraham Palatnik: A Pioneer of Technological Art," by Frederico Morais:  
<<http://www.olats.org/pionniers/pp/palatnik/morais.shtml>> (Texte en anglais / Text in English)

Jacques Leenhardt: "L'aventure latino-americaine de la géométrie," Texte extrait du catalogue de l'exposition "Art construit, art cinématique d'amerique latine," organisée en 1999 par la Galerie Denise René (Paris),  
<<http://www.olats.org/pionniers/pp/palatnik/leenhardt.shtml>>  
(Texte en français / text in French)

Une liste complete des expositions consacrées à l'artiste:  
<<http://www.olats.org/pionniers/pp/palatnik/expositions.shtml>>  
(Texte en français / text in French)

Une biographie resumée d'Abraham Palatnik, par Jocelyne Rotily,  
<<http://www.olats.org/pionniers/pp/palatnik/biographieResumee.shtml>>,  
(Texte en français)

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< OLATS News - 15 June 2002 >

1 - Pionniers et Précurseurs (Pioneers and Pathbreakers): L'oe Fuller, by Marc Boucher, <<http://www.olats.org/setF4.html>>.

"L'oe Fuller was the first international star of solo dance and the first artist to use electric light for art purposes. Her art was essentially in playing with light in movement by using huge silk veils around her ..." (Text in French).

2 - Pionniers et Précurseurs (Pioneers and Pathbreakers): Palatnik, <<http://www.olats.org/setF4.html>>.

An on-line monograph on Abraham Palatnik: the artwork of a key-figure in the history of kinetic and technological arts in Brazil. The first pages of an extensive monograph dedicated to the Brazilian artist Abraham Palatnik are now on-line. According to Abraham Palatnik, the artist's role is to "order the chaos of perception". This is probably what led him to explore such a wide gamut of techniques and materials. At first he tried his hand at the traditional art of painting and pencil drawing; this was in the late 1940s, when he taught art in the Therapy Department at the D. Pedro II Psychiatric Hospital in Sao Paulo. His encounter with the inmates who produced art with a different and complex language turned out to be an extraordinary experience that literally shattered his own relation to art. He then decided to give up painting and contrived his first kinechromatics, which were to make him famous during the first Sao Paulo Biennial, in 1951. With these singular machines based on the kaleidoscope principle, he established himself as one of the key-figures of kinetic and technological arts in Brazil. Now, in its initial phase, the website offers various bibliographies and the beginning of a critical anthology with material contributed by some of the best specialists of Palatnik's artwork, including Eduardo Kac, Mario Pedrosa and Frank Popper. Other texts by Jacques Leenhardt, Aracy Amaral, Frederico Morais and Luiz

Camillo Osorio will be published soon.

3 - Repres et Resources (Highlights and Resources):  
Bibliographie G n rale de l'art technologique (General  
Bibliography in technological Art),  
<<http://www.olats.org/setF5.html>>

The General Bibliography of Technological Art has been updated with many new references. This bibliography, based on recent publications of which we are aware, includes a review, by Julien Knebusch, of Ollivier Dyens' book, "Metal and Flesh, the Evolution of Man: Technology Takes Over," Cambridge, MA, U.S.A., MIT Press, 2001, 120 pp. (in the section 1.1 / Ouvrages th oriques et g n raux/Arts).

4 - Livres et Etudes (Books and Studies): Pour une typologie des interfaces artistiques (A Typology of Artistic Interfaces),  
<<http://www.olats.org/setF6.html>>.

A new essay (in French) in the "Study" section: l'article "Pour une typologie des interfaces artistiques" by Annick Bureau, to be published this autumn, in the collective book "Interfaces et sensorialit ," under the direction of Louise Poissant, Presses de l'Universit  du Qu bec.

5 - New on Virtual Africa, <<http://www.olats.org/setF2.html>>

5.1 - Toyin Loye, a painter from Nigeria presents: " Toyin Loye Paints Life "  
<<http://www.olats.org/africa/galerie/gal-loye.shtml>>.

"I have stories to tell and I have chosen paint to express it. My painting has always been a manifestation of my life experience -growing up in a very rich culture of visual and oral expressions. I was born to a royal house in Ijebu Jesa (1959) South west of Nigeria, where homage is daily paid to ancestors, gods and hundreds of spirits who are roaming about or even guiding and reshaping our daily lives. " - Toyin Loye

5.2 - Within the context "Discovery of Contemporary Arts from North Africa", we are pleased to introduce: "The Cry", by the video artist Hassan Boufous  
<<http://www.olats.org/africa/galerie/gal-boufous.shtml>>. "The Cry" is another vision of loneliness; it is dedicated to all those who suffer and want to escape this gap, and this through a twisted and distorted face that little by little takes back its initial shape... "The Cry" puts an end to suffering." - Hassan Boufous (Text in French)

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