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                |  INTRODUCTION  |
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<  This Issue  >

                          Craig Harris

Leonardo Electronic Almanac contains two Feature Articles this month.
Mike Mosher presents "Community History Visualized: Murals in Place
and Cyberspace," exploring the world of community murals and the
possible mapping of concepts onto the World Wide Web. Mike provides us
with a hypermedia version of the article for the LEA web site. We also
present Installment II of "The Leonardo Equation: Interdisciplinary
Education in Art, Science and Technology." This installment includes a
probing perspective from Leonardo journal Executive Editor and ISAST
Chairman Roger Malina, and a profile of Kris Sorenson's Fresh Voices
project, where she works with students in out-state communities in
Minnesota to express their world views using new media resources. I
encourage the LEA community to get involved in helping us to establish
a critical discourse examining the issues intersecting with this
topic. We are interested in receiving profiles of interdisciplinary
education programs, especially in combination with critical
perspectives about goals and challenges, and about successes and
failures. We are interested in approaching this topic from many
directions, including projects initiated within the science and
technology communities.

Leonardo Digital Reviews is comprised of a collection of Web, CD-ROM,
book and music CD reviews. The LEA editorial team is working on
creating a better scheme to archive and access the reviews that have
appeared in LEA through the years. The LEA community will see some
positive developments in this arena during 1998.

The LEA web site has a new cumulative Index to the contents of LEA
since it began publishing in September of 1993. The links in the Index
point to the entire text version of LEA for issues prior to LEA Volume
5, Number 6, ranging in size from 65K to 100K of text. Beginning with
LEA Volume 5, Number 6 the links point to the issue's main index to
the files in the LEA multimedia archive. Feature Articles and Feature
Profiles are still added to the main web page listing for their
respective areas on a regular basis.

Happy New Year to all, and best wishes for 1998 from the LEA staff!

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                |  FEATURE ARTICLE   |
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<  The Leonardo Equation: Interdisciplinary Education in Art, Science
   and Technology - Installment II  >

Craig Harris
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The topic of this profile evolved out of a presentation that took
place on November 5, 1997 at the Science Museum of Minnesota, as part
of the Art on the Electronic Edge festival. The focus of the event was
to explore current initiatives to integrate the arts into the
curriculum throughout the educational spectrum from elementary through
college, university, and professional school environments.
Participants provide insights into how people working at the forefront
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of the convergence of art, science and technology are addressing issues that relate to these questions. The intention is to establish a dialog focusing on developing an interdisciplinary perspective on education in Leonardo Electronic Almanac, and we will revisit the issue in the months and years ahead.

The first installment of this thread in LEA appeared in LEA 5:11, and is available in the LEA Archive, and in the Feature Articles main page on the LEA web site. Leonardo journal and ISAST Chairman Roger Malina provides his perspective on these issue through the lens of the last thirty years of Leonardo/ISAST in Installment II.

30 years ago Roger Malina's father, Frank Malina - a kinetic artist and rocket scientist at the Jet Propulsion Lab - created the journal Leonardo, providing a forum for those interested in the realm where art, science and technology converge. Today, under the direction of Roger Malina, Leonardo, and its host organization the International Society for the Arts, Sciences and Technology, has evolved to include a book series, an extensive presence on the World Wide Web in 3 languages, and an intense involvement on the international arena. Roger's activities in his capacity at Leonardo, and in his work in the sciences as an astronomer and Director of both the NASA EUVE Observatory at UC Berkeley and of the CNRS-CNES Laboratoire d'Astronomie Spatiale in Marseille, provide us with a unique opportunity to find out about The Leonardo Equation, and the various activities around the world intersecting with the goals of this topic.

Kris Sorenson has been deeply involved in integrating the media arts into schools in the Twin Cities region and throughout Minnesota. Kris provides a profile of her Fresh Voices project, designed to provide instruction in the media arts, and access to technological resources for students as they explore their relationship with the community in which they live. It is clear from this profile that these young artists are not writing or creating works about technological issues; they are expressing their own world views using new media resources in service of their creative imperatives.

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Thirty years of Leonardo:
     a changing art/science/technology perspective
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Roger Malina
Email: rmalina@alum.mit.edu

Introduction

"Leonardo" was founded thirty years ago in Paris, France during a period that witnessed vigorous exploration of the bridges between the disciplines of the arts, sciences and technology. The early days of "Leonardo" saw the flowering of the kinetic art movement, the Experiments in Art and Technology (EAT), musical composition using computers and other activities. These developments were of course inheritors of earlier art and technology movements - including those of the Bauhaus, of pioneers such as Thomas Wilfred or Termen and many other movements that were temporarily eclipsed by "Modernism. "

Today we now see the emergence of a vital "technoculture," a culture that integrates the separate strands that motivate the artistic, scientific and technological impulses to creative activity.

What is Leonardo/ISAST's mission today?

First to help make visible the work of artists who use contemporary science and technology, as well as the work of the scholars and

researchers that surround this work.

Second to foster collaborations between artists, scientists and
engineers. ISAST/Leonardo seeks to provide contexts for catalysing new
kinds of art making.

How does Leonardo/ISAST carry out this mission today?

Presenting work

We present the work of artists, researchers and scholars through a
number of venues, including print journals ("Leonardo," "Leonardo
Music Journal," Leonardo Book series), electronic publications
("Leonardo Electronic Almanac," CD series, Leonardo On Line Web site)
and projects (Leonardo Digital Reviews, Galleries). There are two
hallmarks of our "presenting" activities. First they are all
resolutely international. We work with authors all around the world,
mitigating as best we can the barriers of language (as for example
with our French language web site: see
<http://www.cyberworkers.com/Leonardo>). Second we give a privileged
place to the voice of the artist or researcher. We publish writings by
artists and researchers about their own work, long before the
historians and theoreticians have their say.

Recognising excellence

We have a number of Prizes and Awards which seek to recognise
excellent work on our field internationally. These include the
Leonardo Prize, the New Horizons Award, the Leonardo Award for
Excellence and the Tsao Prize. A new Pioneers Project organised by LEA
Editor Craig Harris will seek to recognise early figures in our field.
By recognising excellent work we help these artists and researchers
reach a wider audience while helping define the boundaries of the new
emerging technoculture.

Stimulating Collaboration

Through a number of activities we try to create contexts where new
collaborations can emerge. We are very aware that new exciting work
tends to arise "on the edge of chaos," in the language of artificial
life research. We have organised a number of small workshops that
bring disparate communities together (e.g. the Space Arts Workshops);
we co-sponsor events organised by others (International Symposium on
the Electronic Art, the CAIIA Consciousness Reframed Conferences, the
Art on the Electronic Edge festival). We have a simple policy of
always publishing the address of all our authors so that interested
persons can meet each other. We recently started a new service in
collaboration with Rhizome Internet LLC; it is an on-line forum to
allow artists and researchers to make contact with those outside their
field and to locate hard-to-find materials and information.

What has changed over thirty years?

The most basic change in thirty years is that there is now a
generation of artists that are scientifically and technologically
literate. They are fully able to exploit relevant ideas and tools from
science and technology in their art and music making, in ways that
were unknown when C.P. Snow decried the two cultures divide. Thirty
years ago collaboration required the difficult task of translation
between communities that had few shared points of contact, methods or
vocabularies. Today there are artists using the most sophisticated
tools and techniques. This change is most marked in the arts and music
communities where there are now new institutions (ZKM, Ars

Electronica, School for New Media) predicated on serving these new kinds of artists. The change is less evident, as pointed out recently by Craig Harris, in the science community. There are still very few scientists versed and familiar with the issues and methodologies of contemporary arts and music. Science has not yet integrated into its practice the new cultural ideas except through "inter-disciplinary" research.

An example will illustrate this. Today the World Wide Web presents a vacuum where new ideas and approaches are battling it out. There is a proliferation of exciting artist created web sites that stretch all our boundaries and definitions of art. The works of telepresence by Eduardo Kac or Ken Goldberg, or the artificial life work of Christa Sommerer or Jane Prophet, or a look at the web sites receiving art prizes at Ars Electronica (http://www.aec.at/prix/indexe.html) are indicative of the explosion of ideas. Science web sites suffer in comparison in their conventional approach at using the new medium to communicate content and ideas.

The major change that is driving this new situation is of course the introduction of the "personal" computer. If thirty years ago computers were rare and only accessible in major institutions, today an artist's studio is often as well equipped as a scientist's laboratory. The result is shared vocabularies and design processes that allow artists, scientists and engineers to work together more easily. One examples of this is in the special effects industry where companies such as Industrial Light and Magic master current computer technology that is at the forefront of the field. Indeed in some areas the entertainment industries are now heavy investors in Research and Development, more so than governments which dominated the computer research funding landscape twenty years ago. An example of a fruitful new type of art-science collaboration is the work of computer scientist Carlo Sequin and artist Brent Collins in the field of what is now called visual mathematics.

The disappearance of the art museum

Another aspect that is changing is the disappearance of the museum or gallery as the prime exhibiting venue for the new kind of art making. Few museums have been able to capture any of the new excitement. Indeed some argue that the art museum designed for the cult of the object is no longer the appropriate exhibiting venue for art that is often temporary, distributed over distance, and inter-active. New exhibiting venues from trade shows, to science museums to alternative spaces, to festivals and events and of course the World Wide Web have merged as the exhibiting venues of choice. If thirty years ago "Leonardo" sought to help artists gain visibility and credibility in the mainstream art world, today "Leonardo" is part of new emerging art institutions and professional infrastructures. The community of interest has grown to such an extent in thirty years that the economic circuit is being altered. Ten years ago at the ICMC and ISEA conferences we worried about being in an electronic art "ghetto;" today the ghetto has grown into a full fledged professional community that is becoming self sufficient.

For the advocates of the new kind of art making, there is a facile way of encapsulating some of the changes. In the information society it has been argued that the scarce commodity is meaning. Then the artist who is by avocation the "merchant of meaning" has a new more central role. The artist emerges as a provider of services rather than a retailer of objects. New institutions in the artworld will be needed to accomodate the new needs of creators and consumers in this changed situation. To be humourous, this year at SIGGRAPH the theme of the art show is "touch," dedicated to the importance of touch - a forbidden

concept in the hospital-like modern art museums that occupy prime real estate in our cities today.

Challenges: The Planetary Collegium

The first institutions that have been forced to change are of course the education institutions that have been responding to student interest. In some institutions the computer arts have been added to the curriculum as another layer to the already confused layering of painting, sculpture and media based teaching. In such institutions photography and video are already poorly integrated into the curriculum. And the sound and musical arts are viewed as being part of a different discipline. In others new "inter-disciplinary" curriculum elements have been created in honest attempts to create a curriculum around content. In many locations the curriculum has been built around the equipment, with inevitable curriculum obsolescence. In other schools, the curriculum has been built around the few qualified individuals that could be recruited to teach; programs that have ended when the individuals have left.

More successful examples are being created recently in Japan and Europe, where new teaching organisations have been created dedicated to the "new media." In other places "hybrid" institutions are being created that seek to bridge not only the new teaching context, but also the new relationships to business. Leonardo/ISAST is now part of the San Fransisco State University "New Media Institute," which is experimenting with new approaches for coupling the arts, research and industry. Such approaches have to envisage unusual partnerships for art institutions, such as the collaborations of artist Shawn Brixsey with a Medical School.

A major challenge of the next decade is a taking stock and re-evaluation of the educational context, and creating new appropriate curricula. It is hard to imagine that the new teaching approaches will not take advantage of the new communication tools of the Internet. The Ph.D. program at CAIIA in Wales is surely a pre-cursor of the new kind of program that will evolve and expand. If yesterday's educational institutions were places that enabled access to libraries and experts, then clearly the new institutions will use the connectivity of the web to create effective ways of doing this today.

Arts and the New Biologies

If the last thirty years of "Leonardo" have been dominated by the integration of the computer into arts making, we can predict that the next thirty years may be dominated by confrontation with the new biologies. Leonardo/ISAST has adopted the theme "Art and the New Biologies" as one of its 30th anniversary themes to focus on these issues. The discoveries in molecular biology and neurophysiology, and the new techniques of genetic engineering are beginning to have large cultural impacts, impacts that are still barely identifiable and understood. In the short term the technologies of artificial life provide new methodologies for artistic creation both in the sound and visual arts. The work in telepresence art and robotics by artists provide glimpses of ways that artists can seek to address issues in symbiotic systems. A few, such as composer David Rosenboom, have been exploring interfaces between computers and the human nervous system. Landscape gardeners are beginning to have access to design tools that until now were only held by architects. The living and inanimate world become integrated into a continuum.

The new biologies raise many ethical and philosphical issues in pragmatic and actual situations. Artists need to be at the center of this exploration and this discussion. Leonardo/ISAST hopes to provide

venues where this work can be presented and discussed, and the
necessary collaborations fostered and stimulated. If today's arts
curriculum is struggling to address the computer ages, tomorrow's art
curriculum will be dealing with the sciences and technology of
biology. We need arts institutions that are flexible and adaptive to
the new environment and ecology of the technoculture.

Fresh Voices
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Issues of identity surround and embed virtually every community. Rural
townships in particular, often find themselves striving to maintain a
"romanticized" common culture that in no way represents the true
diversity and richness of the actual community. It is this suppression
of culture that often weighs heaviest on young people. And just as
they question their own identities, they also question what they see
and experience in the places they live. They begin to notice the
subtle statements of prejudice and isolation. And they find within
themselves a desire for answers, accountability, and change.

Fresh Voices is a unique media arts project designed to facilitate
public voice amongst young people on issues of racism, identity and
representation. The project has been instrumental in teaching a core
group of students skills of public leadership and community dialogue,
and it helped to build their personal voices through art making and
critical writing. The project incorporated video production, digital
imaging, and critical writing skills as the creative and intellectual
underpinning for establishing a long-term dialogue about racism and
identity with youth from the area's primary cultural groups: Native
American, Mexican American, and Euro-American.

Artists Beni Matias and Kristine Sorensen have been working with young
artists from Crookston, Minnesota since 1996. They have spent the past
two summers working with twenty young people from Crookston,
Minnesota, where they have already established ties. This year's Fresh
Voices project is sponsored by the Center for Arts Criticism and
Crookston Americorp, with funding from the Otto Bremer Foundation and
the Minnesota State Arts Board. Fresh Voices is continuing to this day
as these young artists plan and prepare to exhibit their artwork.

[Editor's Note: the LEA profile on the Web contains several images
reflecting the work of the following Fresh Voices participants.]

Hannah Mitchell

Program Evaluation and Artist Statement
October 1997

When I came to the 1997 Fresh Voices workshop I expected to work with
video cameras again and make videos. Instead I was able to branch out
and work with the digital camera and computer to create a series of
photo collages. I really enjoyed this alot! Until I participated in
"Fresh Voices" I couldn't stand computers but now I am much more
comfortable with them.

I would like to see "Fresh Voices" come back and bring all of the

computer equipment I used during the first two sessions. I would like to get even more comfortable with these tools and learn more about how I can create with them and express my thoughts through art. I would also like more information about different colleges.

I've spent most of my life in Crookston. The images I created convey what I see here. The collection of images are all opposites (young-old/poor-rich). They represent only a few types of people in Crookston, but I feel that they make up a very major part of my town. You will see the young people any place you look, roaming everywhere. The elderly people tend to stay behind closed doors. The people that are poor and middle class make up most of the people on the roads. And the "rich" people are the rest - high and untouchable.

For each picture I needed a starting point. For me, this was the background. I can't be happy with a plain solid background with pictures pasted on. I think that a background is what ties everything together smoothly.

[Editor's Note: See notes below for details about the background for each work presented.]

I feel that that my artwork is important because it expresses some of what I see in my town. It's an interesting and creative way of saying some the same things that other people see.

YOUNG GRUNGE
For "Young Grunge" the background was my brother's bedroom wall. It had a graffiti feel to it. Graffiti plays a big part in the grunge/young person stereotype. This, in particular was perfect because it had Kurt Cobain's (youth icon) name and Nirvana written on the wall. It was the perfect door for Kurt Cobain's image in the center.

Love me, need me take me in.
I am your strange little child.
Following through the shadows in the corner of your eye.
I'm always here.

See me respect me, let me out.
I am my own idea of flight.
Always racing towards my next adventure.
Always in the company of "family."

WEATHERING ELDERLY
For "Weathering Elderly" the background was a close up of rust, which to me represents age. I added the border of flowers to represent life. The age/life combination is representing life and death; the gravestone is death and the single flower is life. Age doesn't necessarily mean death.

"... A lonely evening is expected with little or no precipitation. This afternoon began with emotional rain tapering off into a melancholy mist. A resolute chill is creeping into our air as all the pretty flowers sadly bow their heads. By morning the breath of change will blow all of the dust and smiling particles free from the dry ground."

JOHN JOHNSON
A.K.A. MR. NORMALITY
"Mr. Johnson - A.K.A. Mr. Normality" offers a collection of old rusty tubes for its background. Basically; the tubes represent regularity or monotony. They're all going pretty much the same direction and they're all about the same shape, etc. With this background everything fit

perfectly into its space.

John Johnson, age 50, expired of natural causes in his home in Crookston Minnesota on Monday, October 14, 1997 at 11:59 PM. Mr. Johnson was born October 14, 1947 to Nigel and Dora Johnson at their home in Crookston. He graduated from Crookston High School in 1955.

Mr. Johnson married Elmyra Smith on October 20, 1967. They had one son, Flynn. Mr. Johnson was a foreman at a local factory for 30 years and was also an avid hunter. He is survived by his wife, Sara, their son Flynn, and his massive collection of hunting trophies.

THE AMAZING PILL
FOR SALE!
The background for "The Amazing Pill" wasn't easy. I needed to find something that looked and felt rich. I ended up using a close up of textured leaves, then coloring them red. With that background, the house fit nicely and the "lady" picture worked for me as a partial border.

The amazing Purple Plastic Popular Pill. Perfect for plain people who pine away, day after day, for the piece of perfection.

The Amazing Purple Plastic Popular Pill produces positive effects in areas pertaining to politics, prestige, popularity, personality, and posterity.

****proven on hundred percent positive results in plain people across
    the planet****

Hannah Mitchell's Works

Summary of work by Kristine Sorensen
November 1997

Hannah Mitchell is twenty years old. She has lived in Crookston her entire life and plans to make her future here. She is currently an Americorps worker and is searching for a college and future career that will keep her close to home. Until the "Fresh Voices" workshop, Hannah's path was unclear to her. She is an excellent writer and visual artist but did not know how to incorporate these talents into a life time career. The job opportunities for artists in her community are not plentiful and Hannah is firmly committed to living in northwestern Minnesota.

"Fresh Voices" provided Hannah an opportunity to combine her talents with a practical skill. Until she took this workshop, she had avoided working with computers. She was not aware of their creative applications and thus found them frustrating, complicated and intangible instruments. Hannah spent most of her workshop experience thinking, shooting digital photographs, and working at the computer. She spent the entire week working out a photo series about Crookston that represents the images and opinions she carries with her at this time in her life. Through this process she discovered that her art, her voice, and her intellect could be matched and combined through the use of the computer. She struggled to learn many new skills and amazed herself as she saw her art emerge within this new technology. She was further surprised when she realized she had created her artwork using the same tools professional graphic design artists and photo journalists use in their work.

During the "Fresh Voices" follow-up session, Hannah wrote a series of "articles" that now accompany each photo montage. In order to further

tie her art pieces together, she considered the frameworks within her community that connect each of these groups. Thus she loosely based her writings on generic newspaper articles that might be found in the Crookston press. During this weekend session, she also revised her photo work. She cleaned up rough edges, finessed the composition, color and textures. She completed the work to her liking and then compared it to what she had written. She openly received critiques from other participants and her workshop instructors. Finally she met informally with an art educator, who talked to Hannah about her college experience, what regional colleges had to offer, and what professional opportunities now exist in the area for practicing artists and graphic designers.

Hannah is now seriously looking for a college that can offer her more creative access to computers and graphic design training. She is beginning to recognize her abilities to communicate ideas about her community through her strongest talent. And Hannah is beginning to find her public voice.

Cindy Ramirez

Summary of work by Kristine Sorensen
November 1997

Cindy Ramirez is eighteen years old, mother to her one-year old son Xavier, and a recent high school graduate. She is currently working for Americorps as an educational assistant and hopes to go to college to study elementary education. This is Cindy's second year as a participant in Fresh Voices. She is a talented writer and documentary videomaker. She is also outgoing and willing to take chances -- to put forth challenges and ideas, using laughter and humor as a means to create comfort and familiarity when asking difficult questions. Cindy created art work both with digital photography and video. Her photo work complete, she is now in the process of completing a video documentary that shows how people of color are breaking through traditional employment barriers in her home of Crookston.

Because Cindy is a single parent, she often brings her son Xavier to the workshop. She is committed both to taking care of her son and to continuing her studies and opportunities to write and create. Her digital artwork, represented on the following pages, demonstrates her love for her son and the care she brings to their relationship.

In addition to her video and photography work, Cindy is also editing a workshop diary. Within it, there are images of Cindy with her son, video camera in tow. She is modeling community activism and engagement for her son. She is showing him positive ways he too can interact with the community and bring change.

XAVIER
Cindy Ramirez
August 1997

I love my baby. I love him like I love to write and the way I love the outdoors. Actually we both love being outside.

Xavier is my sunshine in the sky. I cherish every single minute I spend with him because I have such a complicated schedule. Even with so much going on, I sometimes just can't wait to get home to play with him, give him a bath, and put him to bed. Sometimes it's kind of hard being around him when I'm tired. Oh well, I can run but I can't hide.

I like being around him when I'm down, because just seeing his cute face and knowing that he's mine makes me proud.

Adam Brown

Summary of work by Kristine Sorensen
November 1997

Adam Brown is seventeen years old. He has lived with his adoptive
family in Crookston, Minnesota for the past five years. Adam joined
the Fresh Voices workshop late in October 1997. He had been in
Juvenile Detention over the summer months and could not participate
with the larger group. It was during this difficult time that Adam
heard from his birth mother. He received a series of letters and some
photographs. He began writing back to her and now has developed a
relationship that is changing his life. Adam is waiting for an
opportunity to meet his mother. He has many questions to ask her. He
looks at pictures of her and wonders what it would be like to be by
her side; he wonders about the memories missed and memories yet to be
made.

During the Fresh Voices follow-up session, Adam brought all of the
pictures his mother had sent him. He spent hours looking at them,
thinking, writing and planning how he could incorporate himself within
the fabric of these snapshots. The first photo montage is still
waiting for his written reflections. Here, Adam has placed himself
with the only photograph he and his birth mother have of his birth
father as a young man. Adam has yet to meet or even hear from his
birth father but expects to make contact within the next year. Looking
at this photograph, Adam searched for physical similarities. The
photograph was badly damaged and fading. Adam took a digital
photograph of himself, posing like his father and then matched the
texture and quality of the fading photograph.

Adam's second photo montage includes a scanned 3 1/2" x 5" snapshot
image of his mother with her father. Adam shot a second digital
photograph of himself and then placed himself sitting in his
grandfather's place. He thought, and then wrote a short poem that he
will soon send to his mother as a gift of acceptance and belonging.

Untitled #1
Adam Brown
November 1997

Everything eventually returns
to the essence.

Everyday I prepare to dwell
in it's infinite presence.

We shall all become one.

One

with the Earth again.

Nothing is capable of seeking
the everlasting bond
 that exists
between the
Earth
and it's
seed.

Mother and Child.

That bond is love.

Adam's final photo montage places Adam at the center of his family
tree, joining photographs of both his birth family and adoptive family
together. With this collective image he acknowledges the vital
importance of both his families. His poem explains the rest.

Untitled #2
Adam Brown
November 1997

I gaze up into the sky and begin to wonder
why
the sight of branches and limbs escorted by the wind grasp my eye.
then I see
that I am
that everything the
roots provide is not
just for me.
I am part of a larger
body.
The limbs are my children
and the branches a representation of the future generations
that will be sustained from the same foundation of a foundation

****

< Community History Visualized: Murals in Place and Cyberspace >
                              Mike Mosher

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Introduction:

One of the most promising new artforms of the past quarter-century has
been the community mural, in no small part because a neighborhood's
history can be given form and celebrated in public. How might that
artform move, in form and content, into the shared digital realm of
cyberspace? Can we create virtual historical murals that reside
online? What past community mural lessons apply, and how can
collaborative group processes be applied to this space?

This paper will touch upon similarities between community murals and
the World Wide Web. It will discuss one visible step towards the
synthesis of community murals and cybermedia, history-themed
multimedia kiosks. It will then present one process that worked
effectively in the creation of community murals that might be adapted
to the creation of artistically-rich community cultural sites in
cyberspace.

I. Comparisons and Complexities:

Multimedia, like the best neighborhood murals, can often be very eclectic in imagery, narrative and visual style. In murals this can be a result of many hands in its design and execution, or even imagery added over the time necessary to complete the mural, its development process responding to the environment. In my own murals in San Francisco County Jail (1982; destroyed 1987), an electrician named Joe who persistently asked "When are you putting me in the mural?" soon noticed workingmen in a cafe scene depicted wearing "Joe's Electrical Repair" jackets.

Multimedia with historical content, especially on the World Wide Web, could link to original sources. This might be counter-histories and arguments that develop dynamically on the website with subsequent research. Sometimes in a mural it can be appropriate to conflate different historical eras for a composition appropriate to the site. I mixed imagery of an amusement park two blocks away 100 years before and a ball team that played one block away 50 years before for "The Mission Reds at Woodward's Gardens" (1982; destroyed 1987) <http://www.ylem.org/artists/mmosher/murals82.html>. Both media--digital and community mural--might thus embody a PostModernist multiplicity not found in more unitary, conceptually centered works.

II. Steps Towards Cybermurals on Web: Multimedia History Kiosks
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An approach towards computer multimedia that counters that of the private reader at an individual desktop or home computer is that of the public kiosk.

Chris Carlsson <ccarlsson@pop.igc.org> and a team of collaborators have been developing "Shaping San Francisco", a work authored in Assymetrix Multimedia Toolbook to run under Windows upon a PC. The work contains critical histories of ethnic communities, labor and activism that are generally submerged, and is intended to be exhibited at festivals and street fairs, public libraries and on the city's busy streets during the working week.

"Space|RACE" by Colette Gaiter <colette_gaiter@mn.mcad.edu> contains memories by both the artist and multiple interviewees about the impact of both the NASA Space Program and the civil rights struggle in the 1960s. It was developed on the Apple Macintosh using Macromedia Director, and has been exhibited in sited installations in Minnesota, Texas and California. The artist has written about the genesis of this piece in the journal Bad Subjects <http://english.hss.cmu.edu/bs/33>.

My own Macintosh-based kiosk artworks, authored in Macromedia Director or Apple HyperCard, "Collaborationation" (1992), "DevilsFood Daniel" (1993) and the kiosk adaptation of the performance work "Christopher Cumulonimbus" (1991) can be seen as fragments or sketches of the kind of simultaneously physical and virtual murals assembling history in both paint and pixel I hope to soon create. I want to make painted walls upon which a touch upon a figure will reveal screens containing ornate and expressive digital information. And their form and content will be all the more powerful as the result of a methodical collaborative process.

III. The Tennis Game: A Nine-Step Process for Community Murals
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From experience in over a dozen public mural projects in San Francisco, I have developed a procedural model for artist and community interaction in the painting of a mural that I call the "Tennis Game". In this nine-step process the trained muralist gives form to content shared and developed among a group of non-artists who

want to see a mural in their neighborhood. This participatory relationship between artist and audience is unconventional to our society but the standard in many traditional cultures. Like a game on a neighborhood playground, the leadership role in each step of the process bounces back and forth, from artist to community, back to artist, to community and so on. Though all the participants are involved in both the design and painting process, I here define the "artist" as one who is educated in the history and craft, and brings to the project her or his set of professional skills. This process maximizes the use of the skills of both the professional artist and the untrained neighborhood group of participants that will live or work with the completed mural. The Tennis Game method proceeds through clearly defined stages of responsibility that shift between the artist and the neighborhood group.

First of all, the group initially desires a mural, begins to look at its potential site differently from that moment on, and contacts an artist.

In the second step the artist steps in, introduces her or his own work, provides historical examples. These may be slides or shared pictures of the murals of Pompeii, Bonampak, Renaissance frescoes, Los Tres Grandes (Rivera, Orozco and Siquieros) of Mexico, local examples of murals and the artist's own. The group begins to evaluate these works as achievements of which they too are capable, even considering imagery and aspects of ancient or classic works to quote. The artist helps the neighborhood participants develop an educated eye before the research and drawing begins.

Third step, the group examines its reason for painting a mural, thinks about itself, of what it's proud, the community context of the mural. To "What do you want to see?" usually will result in suggestions of second-hand imagery--the latest television craze, a pop celebrity or local sports hero. If the question is phrased "What is important to you?" the neighborhood will examine itself, its strengths and its motives. The sports hero may reappear, but as an example to youth as a kid from the neighborhood housing project that worked hard and made good. Sketches are brought in, photographs from their own albums, or from magazines. The group realizes its imaginative resources, its own imagery and even the world of imagery to adapt and use and assemble in its own localized context.

In the fourth step the artist then employs design skills to assemble the imagery into coherent form. Suddenly it looks like Art! Symmetry, balance, and the scale of each image are given attention and a unified look. Perspective, if any, is established, diagonals and a sense of movement, perhaps a spiral of imagery.

Yet the group must be able to look at this possible design and see it as theirs, so the fifth stage is their critique and improvement of it. They now have one or more concrete visualization of possibilities to evaluate. Their newly heightened aesthetic awareness supplements the artist's, due to their own familiarity with local content and context. They offer their changes, refinements to be incorporated into the design, and approval. They also aid with any preparation of the wall necessary.

For the sixth step the artist then draws the design upon the wall with chalks, graphite or china markers, rapidly applying her or his learned skill. This drawing stage can be the most frustrating to non-professionals. The original drawing might be squared-up for accurate transfer to the wall, or drawn upon it more or less freehand. The latter process can have an organic quality caused by human scale, by the arcs of the arm like the Vitruvian man within the circle. Lines

must be readable to all participants, yet not coloring-book confining.

The group then actually paints the mural as the seventh and often
longest step. The artist provides suggestions for color-mixing and the
development of value range, teaching the use and abuses of outlining
and the visual push and pull of foreground and background. Most of the
art instruction the artist provides here grows out the solving of
specific problems, as on the job in any workplace. Brush care and
cleanup may need to be taught, and an example of perseverence,
motivation and energy, for the process often feels like housepainting
until the wall is completely covered with paint. It can be difficult
convincing participants that there is such a thing as underpainting.
By this end of this step all can satisfactorily say that they painted
their mural.

In the eighth step the artist paints finishing touches, perhaps
lettering if any, some outlines, shadows and shadow edges and
highlights. Definition is provided by a unifying hand lightly lain.

Finally the group varnishes the complete mural if necessary. The
neighborhood celebrates and dedicates their mural, perhaps on an
ethnic holiday. Neighborhood unity has been enhanced, and the event
brings it publicity and possibly contacts with local politicians
seeking photo-opportunity. Yet the process has raised political
conciousness through group accomplishment; if we accomplished this,
what issue can we tackle next? The mural now becomes part of the
neighborhood history it may depict, as well as beautification and
decoration. The neighborhood lives with it, and how long the mural
lasts and is respected often reflects the degree of success of the
Tennis Game process to involve its audience in the artwork's creation.

I would like to see this process adapted to the development and
construction of "community art machines", or richly visual murals on
the World Wide Web. For this process to be adapted for online use,
the Artist takes the role of Interface Designer, Web page builder,
sitemaster or HTML and Java-coding engineer as well as one who draws
and paints. And increasingly the Web affords the opportunity to
include digital audio and video as well as imagery and text, so the
medium demands a certain cinematic sensibility, literacy, design and
technical skills.

There have been digital mural and collaborative art projects in the
1990s at SIGGRAPH and elsewhere, organized by Victoria Vesna
<http://www.arts.ucsb.edu/~vive>, Judith Miller and Bonnie Mitchell
<http://ziris.syr.edu>. While I enthusiastically applaud these
artist-organizers for overcoming myriad technical issues in creating
their projects, I differ philosophically with them in that I believe
the finished artwork must be as important as its process. After great
human effort, the research has been accomplished; now it is time to
use these techniques to create artworks with imagery beyond transitory
digital graffiti. I believe also that there needs to be greater
structure as well as a basis for community--beyond "We're all
artists"--to make a group project truly succeed.

A Web art project in the planning stages as of this writing (October
1997) is an online collaboration between friends and students of
Violet Murakami in Hawaii and those of Mike Mosher in San Francisco.
A mythical new nation is created from the Hawaiian Island and San
Francisco Bay Area as a result of seismic cataclysm bringing them in
close proximity, offering a site of commentary on the contemporary
culture and politics of each.

Caveats and Conclusion

Cyberspace challenges definitions of community, as there may be shared
values and agenda between people physically far removed and in touch
solely by the mediating technology of cyberspace. It can be argued
that this is merely affinity not community, giving participants the
ability to immediately drift away that is denied members of an ethnic
community or any locality in daily corporeal lives.

When the site of meaningful community artwork is not physical--like a
wall at a busy intersection--but a node in cyberspace, a mural is
then a document as much as an environment...or (perhaps as in real
life) a combination of both. Yet one great impediment to acknowleging
community-based Websites as democratic a space as a neighborhood mural
is the simple fact that even in the United States, even in
California's Silicon Valley, access to the Internet or even
non-networked computers computers is far from universal. Even in
colleges and universities many remain offline, for whom effective
training in their use is often not provided.

Cyberspace challenges traditional definitions of memory and history,
as well as access to archives and narratives, when history is created
as a kind of groupware. Nevertheless, the body of experience from
community mural organizing help give understandable, usable, visually
attractive form to the online histories we will build.

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                    | LEONARDO DIGITAL REVIEWS |
                    | December   1997 |
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< Web Site Review: Malinet >

Malinet
URL: <http://www.malinet.ml>
Reviewed by Roger Malina, leo@mitpress.mit.edu

ISAST/Leonardo is currently collaborating on a project called Virtual
Africa (curated by Jocelyne Rotily). Through this project we are
beginning to work with organisations and artists in Africa. We were
recently contacted by artist Cheick Sow <caksow@malinet.ml> who lives
and works in the African country of Mali. Through him we were
introduced to the internet site in Mali - <www.malinet.ml>.

The web site is in French and informs us that there are now 500 people
with access to the Internet in Mali. The site provides information
about the country, as well as information on a number of artists. The
site is a model of elegant and appropriate design. Easy to navigate,
with a presentation that is concise and informative. A highlight of
the site is a presentation of Cheick Modibo Diarra currently a
technical manager at NASA JPL for the Mars Exploration Directorate.
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< Book Review: An Encyclopedia of
Archetypal Symbolism >

An Encyclopedia of
Archetypal Symbolism,
Volume 2: The Body

by George R. Elder.
The Archive for Research in Archetypal Symbolism.
Shambhala Publications, Inc.,
Boston, MA 02115, USA. 1996. Xvi + 452 pp.
ISBN 1-57062-096-2.

Reviewed by Istvan Hargittai
Email: hargittai.aak@chem.bme.hu

This is a beautiful large-format book, a typical coffee table volume,
whose 100 entries can be read and enjoyed one by one. It is the
second volume of the Encyclopedia; the first volume appeared in 1990.
The collection of color images and text of the first volume was
organized around mythic themes from cosmos and creation to death,
transformation, and rebirth. The second volume deals with artistic
occurrences of the human body. This is a very focused collection in
which various details get a lot of attention. The material is divided
into 12 sections of an almost anatomical arrangement: Primordial Body;
Bones; Skin; Head and Hair; Eye; Ear; Hand and Arm; Respiratory and
Digestive Systems; Heart and Blood; Sex Organs; Foot and Leg;
Transformed Body.

One hundred color plates represent artifacts distributed with apparent
care among a wide range of techniques, time periods, geographic
locations, religious affiliations, and probably many other, less
conspicuous considerations. Each section devotes its opening page to
some relevant poetry. Within sections, each entry has its color plate
with some technical information and a summarized description of the
illustration. A brief introduction is followed by the backbone of the
material, a two-part discussion of the illustration called Cultural
Context and Archetypal Commentary. Each entry is concluded with a
short bibliography.

Individual selections might be an easy target to question but the
collection is so comprehensive, the pool to consider so vast, and the
obvious considerations so multi-faceted that nothing short of rich and
fortunate would be a fair characterization. Yet if I could have my
wish, I would have loved to see an image in which the learning,
itself, about the human body is depicted.

Of the two parts in the main text, the Cultural Context is informative
and helpful. We learn about the sculpture or painting, about the
artist, and about the cultural and historical circumstances of the
creative work. I feel ambivalent about the second part, the Archetypal
Commentary. While I realize that this is the basic motivation and
purpose of the whole collection, sometimes, I think, less might have
been more helpful. A difficulty may have been for the author to decide
whether to omit some famous scholars' opinions and discussions from

the present overview.

In any case, every entry is a masterpiece, praising the author, a
historian of religions, for his knowledge as well as his economy. In
his Introduction Elder thanks the many scholars whose contributions
made him seem to know more than he actually does. A remarkable
modesty, but whatever the multitude of his sources, Elder proves to be
a gentle and effective teacher throughout these pages. His seemingly
effortless pedagogy will greatly contribute to the anticipated success
of this book for a broad readership.

[Editor's note: Please see full text version of this review at
<www.mitpress.mit.edu/e-journals/Leonardo/ldr.html> Choose Issues:
December 1997]
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< Book Review: Electric Sound >

Electric Sound: The Past and Promise of Electronic Music
by Joel Chadabe
Prentice Hall, New Jersey, U.S.A.,
1997, 370 pp.
Paper, Illus. ISBN: 0-13-303231-0.

Reviewed by Marc Battier
Email: <bam@ircam.fr >
URL: <http://www.mygale.org/00/bam>

The list of informative books on electronic and computer music is
surprisingly short for such an active field. Furthermore, most of the
literature is oriented toward technical information and based on
secondary research. This is why the lively new book by Joel Chadabe,
"Electric Sound", is an invaluable and unique contribution to the
field of electronic music in general. Subtitled "The Past and Promise
of Electronic Music", the book relies on primary research to deliver a
comprehensive historical survey and paints a landscape of the wide
variety of practice, experimentation and achievement in the field.

The author devised a unique approach to writing this book: over the
course of several years, he conducted more than 150 interviews with
composers, researchers and entrepreneurs. This makes for a very
engaging presentation in which it seems that the people who have made
a contribution to the field talk directly to the reader. It also
creates an inexhaustible resource for citations---a fact that will not
escape the scrupulous attention of students, who will find first-hand
intellectual food for the preparation of their theses here. All
citations are dutifully referenced in an appendix to the book.

Chadabe has also extracted numerous citations from sources other than
his personal interviews. The sheer number of references displays the
depth of knowledge the author possesses in this field. The book is
generously illustrated with photographs, many of which were taken by
the author and, like the excerpts from interviews, appear here for the
first time in print. This alone contributes to the unique position of
the book in the literature dedicated to electronic music.

Chadabe has chosen a structure that displays his own interpretation of
electronic music history where the medium is less important than the
set of musical operations one chooses for a particular piece. This is
a rather new way of looking at history. Even in the recent past, most
books would tend to place music created with electronic techniques in
the studio in opposition to live electronic music: the environment in
which the music was set became a category.

Chadabe begins with a short history of electric and electronic instruments from their origins through the 1950s. There is no doubt that a discussion of instruments is a natural opening for a study of music technology. But a quick look at the table of contents shows that the book also ends with the idea that the most recent evolution in the field returns to the use of instruments. This conclusion is not at all obvious, as music technology, for over 30-odd years, has been relying more on machines or technological know-how than on instruments. In that respect, "Electric Sound" offers, from the start, the promise of a highly original account of a whole century of music technology.

Near completion Chadabe asks a question that loops back to its' opening; what ideas emerge for an interactive instrument? The question of where we are going is the topic of the last section of the book, titled Summaries and Speculations.

"Electric Sound" is the work of an author who is a composer, an active contributor to the field of electronic music through his research endeavors, and a witness of his time. It marks the advent of a new era in which electronic music, in all its aspects, is becoming a part of our cultural memory. It is a book that is not to be missed.

[Editor's note: Full text version of this review is available at <www.mitpress.mit.edu/e-journals/Leonardo/ldr.html> Choose Issues: December 1997]
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< Audio CD Review: Suspended in Amber >

Sarah Peebles, with Takahashi Harada, Kazue Mizushima, Ko Ishikawa, Hiromi Yoshida and Ikuo Kakehashi.
Innova Recordings,
St. Paul, MN,
U.S.A., 1996.

Reviewed by Patrick Lambelet
Email: <plambelet@msp.sfsu.edu>.

This remarkable work demands to be heard with one's senses and mind wide open; it would be a great loss to miss the subtleties of these engaging compositions by Canadian composer Sarah Peebles.

Collaborating with several Japanese composers and musicians, Peebles draws from a broad scope of Japanese music -including ancient court music (gagaku), Buddhist and Shinto ceremonial music and contemporary electronic composition - and infuses it with her own Western musical background, creating a work that is multilayered and challenging.

The pieces incorporate themes of nature and of the cycles of change, relying for their richness on the improvisational interplay of the musicians. The sound sources used range from traditional Japanese instruments to MIDI keyboards, digital sampling and toy instruments. At the core of the nine tracks on Suspended in Amber is a deep stillness, a fluid line holding the pieces together even as their sonic intensity and dissonance threaten to overpower the listener. This is not new age or ambient music - it is, in fact, quite jarring at times - but it nevertheless evokes a sense of something eternal beneath cacophonous change.

Sitting in my urban flat, surrounded by the tumult of civilization, I was concerned that the peacefulness of this music might be shattered by my surroundings; fortunately, I was wrong. Outside sounds, in fact, became welcome additions to the sounds coming from the speakers - my

windows shook and creaked as loons cried out; a passing car blared
Mexican music as Buddhist chants wove a gentle, calming tapestry;
neighbors' voices came through the walls as flutes, drums and washes
of electronic sounds appeared and dissolved into thin air.

Maybe the greatest pleasure of listening to "Suspended in Amber" is in
discovering the sense of balance pervading it. Never does it become
dull, mushy or so soft that its meaning is lost. It does not assault
the listener with grandiose ideas and self-indulgent technical
prowess. Instead, it conveys a subtle sense of impermanence and of
creative interplay of musicians whose level of sensitivity is uncommon
in much contemporary expression.

[Full text of this review is available at
<www.mitpress.mit.edu/e-journals/Leonardo/ldr.html> Choose
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< Book Review: Seeing Jazz >

Seeing Jazz: Artists and Writers on Jazz
Smithsonian Institution Traveling Exhibition Service,
San Francisco: Chronicle Books,
1997
ISBN 0-8118-1732-6.

Reviewed by Roy Behrens
(Republished from Ballast)

Some people are capable of"synaesthesia," which results in a kind of
connection among the various senses. The Russian painter Wassily
Kandinsky, for example, often heard specific sounds when looking at
colors, or saw colors when listening to sounds. The intent of this
book is not dissimilar, in the sense that it tries to establish a link
between the musical experience of jazz and the sensory experiences of
other art forms, including painting, sculpture, photography, and the
written word.

The result is a kaleidoscopic assortment of more than 160 visual
artworks, anecdotes, poems, lyrics, and jazz-related writings,
including, for example, four Romare Bearden collages; Piet Mondrian's
famous Broadway Boogie Woogie; Lee Friedlander's photograph of Sweet
Emma Barnett; and poignant excerpts from Ralph Ellison's The Invisible
Man and Jack Kerouac's The Beginning of Bop. Divided into three
sections (Rhythm, Improvisation, and Call and Response), each
introduced by a brief essay by Jazz scholar Robert O'Meally, this is
the catalog for a traveling exhibition that began at the Smithsonian
in October 1997 and will travel around the country until July 1999.
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< CD-Rom Review: The Sonic CD-ROM for Desktop Audio Production: >

The Sonic CD-ROM for Desktop Audio Production: An Electronic Guide to
Producing Computer Audio for Multimedia

Durand R Begault
Academic Press Professional, 1996.
$44.95.
ISBN 0-12-084738-8

CD-ROM requirements :
Macintosh - System 7.0 or later;
Windows - Windows 3.1 or later.

Reviewed by Stephen Wilson
Email: <swilson@sfsu.edu>

This CD-ROM is a superb resource for anyone interested in the practice of producing computer based audio. It is primarily aimed at beginners and intermediates although even jaded advanced practitioners might learn a thing or two. The disc covers technical theory and practice of computer sound production. It also covers some aesthetics although it primarily focuses on technical topics including audio basics of frequency, pitch, intensity, spectra, noise, and modulation; storage micing, and recording; sound authoring; digitization and editing; and effects. It also provides an interesting discussion of cutting edge techniques such as 3-D Sound and auralization.

The disc is an example of a new genre that will hopefully become more prevalent. It is designed as a teaching/learning envirnoment just as a textbook would be. But it takes unique advantage of the CD-ROM environment. Each topic is presented with text and illustrations. Each topic is also presented in glorious aural detail. Begault has worked hard to create clear audio examples to illustrate many of the topics in the book. For example, any basic text in computer sound will deal with topics such as wave shapes, sampling rates, or compression methods. The Sonic CD-ROM provides series of sounds that let the learner hear what is being taught. For example, the same pitch manifested in a square, triangle, and sine wave or the same sound recorded at various combinations of bit resolution and sampling rate or the same sound compressed with different methods.

Everyone talks about the educational promise of multimedia. This disc begins to show what this could mean. In some sections the disc combines aesthetics and technical detail. For example, one section demonstrates the impact of different sound qualities on the meaning of text. The disc provides dynamic examples by having a narrator present the same text narration processed in different ways.

The disc does have a few places it could be strengthened. The technical material could be quite overwhelming to a beginner. Begualt has developed some helpful techniques such as color coding terms and image navigation conventions, but until the user understands these, the treatment could be overwhelming. I wondered if a special section for novices might have been benficial. Also, the tech art community is alive with cultural/ aesthetic analysis of how new technologies fit in the larger picture. I would have liked to have seen some more attention by the author to these issues.

Begault has a fascinating background. Most recently he has been a NASA researcher working on 3-D sound and other cutting edge technologies. He has both a Ph.D. from UC San Diego and a MFA from Mills College (California) eminent program in experimental sound. He has taught sound courses at both San Diego and San Francisco State. I strongly recommend the disc for anyone who wants a comprehensive introduction to computer sound. Begault's diverse background has enabled him to create a valuable resource for a wide variety of learners.
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< Editorial: William Burroughs Obituary by George Gessert >

William S. Burroughs
1914-1997

William Burroughs' life reads like some foundation myth of contemporary culture. His paternal grandfather invented the adding machine and established the company that bears the family name. A maternal uncle, Ivy Lee, helped forge modern public relations as a powerful weapon for big business in its battle against labor.

Burroughs went from the Los Alamos Ranch School which William Burroughs attended as a boy (in later life Burroughs sometimes referred to it as his radioactive alma mater since after he graduated the government commandeered the campus and turned it into laboratories for the Manhattan Project), through Harvard, the University of Vienna medical school, journeys in study of psychotropic plants, addiction to heroin, writing to fend off "possesion" which had, he claimed caused him to commit accidental murder, censorship, prison, and back to notoriety and to acclaim as one of America's most influential authors.

He was thoroughly American, adrift, alienated, profoundly inventive, and tyrannically individualistic. His imagination was shaped by mass media, science, and imperial power. His personal life was a head-on collision between American democratic ideals and its harsh class realities. Humor was his lifeline. He is one of our greatest humorists, comparable to Twain and Vonnegut. Naked Lunch may be one of the most horrifying novels ever written, but it is also one of the funniest, and anyone who can read it without laughing again and again has missed the point. Burroughs himself gave readings from it in the manner of W. C. Fields.

Burroughs intended to shock, of course. If writers are lighthouses, he illuminated reefs that can wreck us all. He accepted the role of bad news messenger with caustic humor, and spoofed Naked Lunch as a book that "grabs you by the throat ... It leaps in bed with you and performs unmentionable acts ... behind the [book's] humor, the routines, the parody (some of it a bit heavy-handed to be sure), you glimpse a dead-end despair, a bleak landscape of rubble under the spreading black cloud of a final bomb." Self-ridicule like this is precarious. It leaves ample room for irony and extreme violence, but no room at all for self pity or other false notes. Literary rote was impossible for him. He found even such minor exercises in mechanical writing as biographical notes virtually impossible.

He practiced writing as a form of dictation or magic, and like a shaman often worked with the help of drugs, especially marijuana. In his last years, Burroughs came to see need for heroin as the result of a physiological deficiency, similar to the diabetic's need for insulin, and he wrote at least one novel, The Place of Dead Roads, on heroin. However, throughout most of his life as a writer heroin contributed to his work only as a negative force, something to overcome. He mapped the absolute need of addiction as a metaphor for civilization in general, and for appetite for power in particular. Exceedingly few writers have explored in as lucid and sustained a way effects of the great 20th century technologies of control and destruction on imagination - only Norman Mailer, Philip Dick, Kurt Vonnegut, and J. G. Ballard come immediately to mind, all of whom except Mailer are science fiction writers, and underrated by critics. Science fiction has been 20th century literature's cinderella, consigned the dirty work of creating myths for a violent century.

Burroughs believed that among the arts literature was fifty years behind the times, but that the visual and music were genuinely contemporary. To me his novels of the late 1950s and early 1960s do not recall Finnegan's Wake or The Tropic of Cancer so much as improvisational jazz and abstract expressionism. Like Pollack, who abandoned concern for a permanent art, Burroughs saw permanence in literature as inappropriate to an age of instant annihilation, and he tried to create an emergency literature for breakthrough into a new culture. In this he was close to the spirit of much experimental art, which is probably why Burroughs appealed to visual artists as did no other writer of his generation. My only contact with him was by letter. In 1988 I wrote him to praise The Western Lands for exploring effects of biotechnology on imagination, something that was

vanishingly rare in fiction of the 1980s (and only slightly less rare
today.) One phrase in his reply leaped out. "I don't see art as ...
information, rather all artists are trying to literally create life."
[7] We exchanged a few more notes, and he encouraged me to devote all
my energy to genetic art. For the right words at the right time I owe
him a debt of gratitude, which is why I am writing this obituary.

Burroughs believed that certain determining features of our time -
mass media, nuclear devices, industrialized genocide, the decoding of
DNA, space exploration, and seemingly limitless forms of control -
demand reassessment not only of all pre-existing myths, but of
language itself. In the beginning was definitely not the word. To me a
significant part of Burroughs' appeal as a writer is that his capacity
to give everything to his art, and his genius for language still
reflect profound suspicion of words. Language was a virus, but a virus
that could be turned on itself to liberate its hosts.

Burroughs is not for everyone. He wrote neither for those interested
only in the mundane details of protected lives, nor for those who
believe that some things should never be said. No doubt Burroughs may
be forgotten, canons being what they are, but Burroughs has already
left such an indelible mark on culture that his anarchic spirit will
enliven the arts whether or not his works are read. As we move into
the 21st century, which is already taking shape as the time of the
great extinctions, nature's naked lunch, we will need more than ever
his determination to destroy the destroying culture, to take the
reality studio and find alternatives. He was less a voice of despair
than is generally realized. He permitted himself to seriously consider
the possibility that the human race was an evolutionary mistake, but
he kept writing, and trying to warn. He believed, as many lesser
artists and writers do not, that history can be changed by art.

[Editor's note; Please see full text & notes of this article online
at www.mitpress.mit.edu/e-journals/Leonardo/ldr.html
Choose Issues: December, 1997]
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< Digital Review Notes >

Leonardo Digital Reviews is a review journal published regularly as a
section of the Leonardo Electronic Almanac. Leonardo Digital Reviews
covers publications, conferences, events and publicly presented
performances and exhibits. The focus is the work of artists,
scientists, technologists and scholars dealing with the interaction of
the arts, sciences and technology. Topics covered include the work of
visual artists, composers and multimedia artists using new media and
technologies in their work, artists dealing with issues and concepts
from contemporary science, the cultural dimensions of science and
technology and the work of scholars and historians in related fields.

Specifically, we publish:

a) Reviews of publications in electronic formats (CD, CD-ROM, CDI,
on-line, diskette, WWW, etc.).

b) Reviews of print publications, events, conferences, and exhibits
dealing with art, science and technology.

Accepted reviews will be published in Leonardo Digital Reviews.
Reviews of key works will also be considered for publication in the
Leonardo Journal and Leonardo Music Journal published in print by MIT
Press. Authors, artists and others interested in having their
(physical) publications considered for review in Leonardo Digital
Reviews should mail a copy of the publication to Leonardo, 425 Market

Street, San Francisco CA 94107, USA. Event and exhibit organizers, and authors of virtual/electronic publications and events interested in having their event reviewed should send information in advance electronically (only) to:

<davinci@uclink.berkeley.edu>

Individuals interested in being added to the Leonardo Digital Reviews review panel should email (only) their curriculum vitae to:

<leo@mitpress.mit.edu>

We are particularly seeking reviewers who can review material in other languages than English. Unsolicited reviews are not accepted by LDR.

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             |   ANNOUNCEMENTS    |
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< eXstatic >

Terry McDermott
Next Wave Festival
31 Victoria Street
Fitzroy, Victoria, 3065 Australia
Tel: +613 9417 7544
Fax: +613 9417 7481
Email: <nextwave@peg.apc.org> (subject: exstatic)
URL: <http://www.peg.apc.org/~nextwave/>

Extending successful versions of this project in Melbourne in 1996 and Perth in 1997, the 1998 Next Wave Festival is proud to announce the return of:

          ---   ---   ---   eXstatic   ---   ---   ---

An invitation to composers, sound artists, electroacousticians...

This is a world-wide call for entries for works from artists working in the field of electroacoustic music. Previously unpublished works are required for an exciting new mode of acousmatic presentation.

Computer music composers and sound-artists are invited to submit pieces or 'modules' of music to form part of a unique collection of music that represents the cutting edge of contemporary sonic art. Your sound-works will be collided in the space to immerse the audience in a virtual sonic vortex. You are no longer static: you're ex static...

This project constitutes a search for the most innovative experimental sounds being made today, beyond sounds that might be called "figurative" to find the non-figurative and abstract, through the transformation of the perceived materiality of sound.

eXstatic extends the radiophonic practice of the cross-fade through the simultaneous layering of different pieces using a computer-controlled sound-spatialisation system, which can play up to four different stereo tracks simultaneously, channelled into eight independent speakers. By dynamically spatialising the sound, one can optimise the listening space, exploiting the ear's ability to locate sounds within the physical space. Each sound source is able to have

its own trajectory in the space, independent of the other sources. It extends the traditional idea of sound diffusion in acousmatic listening, by allowing more than one piece to be played, but maintaining the original stereophonic image of each individual piece.

By juxtaposing often contradictory, dissimilar sonic worlds upon and each other, the possibility of metaphor is created, in much the same way as montage may cause metaphorical relationships to be perceived between images in cinema. eXstatic explores this mode of performerless loudspeaker music - by celebrating the latest advances in musical craft; spatialising and combining these new sounds to create an enhanced acousmatic experience.

Because of the method of presentation, any piece you submit will be mixed with other music, and possibly only an excerpt of your piece might be played: in other words, your music will be recontextualised, and you must be comfortable with this type of treatment. eXstatic will consist of two separate performances at a new venue, The Public Office, in Melbourne, Australia on May 16th and 22nd, 1998.

SUBMISSION DETAILS

*   Up to three pieces can be submitted, but no more than 12 minutes of music in total.

*   Material is to be submitted on DAT at 44.1kHz sampling rate, audio CD, or as a stereo AIFF file, 44.1kHz on CD ROM. Your submission must be at the beginning of the tape, and there must be no other music on it.

*   Please label tapes or CDs with the word "eXstatic" and your name.

*   Submissions should also provide these details, on an A4 sheet of paper:

1. Your name, age and contact details, including postal address, telephone number, and email address.

2. Titles of each item in the order they have been put down, with their corresponding durations in minutes and seconds.

3. Your official or unofficial "title", for instance "Brian of Nazareth", "Desert Wanderer", "Victim of Mistaken Identity", or "Betty Boo", "Record Producer", "Very Hip Label" etc. This short description will be used as a biographical note for the program/catalogue, and will be projected onto a screen while your piece is being played, as a type of credit. It should reflect who you are and what you would like people to know about you.

CLOSING DATE

Submissions must be postmarked no later than Monday 16th February 1998, labelled with the word eXstatic, and sent to Terry McDermott at the address above.

Successful applicants will be notified by Friday 13th March 1998.

RETURN OF YOUR MATERIAL

If you live in Australia, please include postage stamps to cover the cost of return postage. If you live outside Australia, send three international reply-paid coupons.

Enquiries should be directed to Terry McDermott or Lawrence Harvey at

Next Wave Festival (contact information above).

Festival Director: Wendy Lasica. General Manager: Michelle Armstrong.
Festival Co-ordinators: Samantha Comte, Lawrence Harvey, Kerry Watson.
International Projects: Kate Daw. Special Events: Berni M Janssen.

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< ArtSci 98: Seeding Collaboration >

Cynthia Pannucci
Founder/Director
Art & Science Collaborations, Inc. (ASCI)
Tel: 718 816-9796
PO Box 358, Staten Island, NY 10301
Email: <pannucci@asci.org>
URL: <http://www.asci.org/ArtSci98>

Art & Science Collaborations, Inc. (ASCI) and The
Extended Studies Program at The Cooper Union
invite you to:

A Public Symposium......

A r t S c i 9 8: SEEDING COLLABORATION

(Panel discussions & visual presentations)
Sat. April 4th & Sun. April 5th
10am - 6pm each day
The Great Hall at Cooper Union, New York City

(huge discount for Pre-Registration)
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INTRO:

Technology: it's the social, political, and economic buzzword of our
time. But what about the creativity of the minds working at the
forefront of "pure science" that underlies it all? And how is their
discovery and innovation effecting contemporary art and aesthetic
thought? This is the theme of ArtSci98, a two-day symposium to be
held in the Great Hall at Cooper Union on April 4 & 5, 1998. There,
40 of our nation's most curious minds: research scientists, artists,
educators, writers, and science and technology professionals, will
present their work in relation to issues of discovery, creativity,
innovation, invention, and current career challenges. The goals of
Art/Sci'98 are to dispel misconceptions, confirm suspicions about the
advantages of multi-disciplinary learning, and take an affirmative
step in the direction of narrowing the personal and professional
schisms between scientists and artists and the general public.

This event is SPONSORED BY: Discover Magazine and Leonardo Journal;
with additional support from AT&T.

The special web-segment created for ArtSci98 was donated by Roy
Harrison and includes: Program, Topic Premises, Short Bios,
Registration Info, Hotel info, and info. about producers and sponsors.
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KEYNOTES:
Agnes Denes..... pioneer environmental artist; 1997 Prix de Rome
Roger Malina.... astro-physicist & Editor of Leonardo Journal

PANEL FORMAT: (75min. each)
- Introduction of each panelist (1min.) by moderator
- Each panelist talks about & shows (A/V) the conceptual framework of

their current career challenge (5min.)
- Followed by a moderated discussion of specific panel topic (30min.)
- Questions & Answers from the audience (15-20min.)

EACH PANEL CONSISTS OF:
a scientist, artist, educator/ theorist/ or writer, science or
technology industry representative, and moderator.

PANEL TOPICS
I. Creativity - its meaning and function in science and art.
II. The Transformative Functions of Science & Art
III. The Dialectics (Cybernetics?) of Art and Science
IV. The Artist and Scientist in Society
V. Technology & Creativity
VI. Problem Solvers & Mythmakers
VII.   Science in Art, Art in Science: Influence and Integration
VIII. Literal & Actual Collaborations

LOUNGE/ GREEN ROOM:
Comfortable furniture with coffee tables to provide a quiet,
thoughtful place for participants and speakers to meet one another
informally. Lite food and beverages will be available for sale. For
between panels and during the lunch-break, especially if it rains.
((((SPONSORSHIP OPPORTUNITY))))

CD-ROM GALLERY/ SPONSORS ROOM:
Just before you enter the Great Hall, there is a gallery area for
Sponsor booths/ info tables /displays. Also, situated along one wall,
4-5 computer stations will showcase some of today's hottest art and/or
science CD-ROMs. (((SPONSORSHIP OPPORTUNITY)))

SCIENCE AREAS:
- materials science
- computer & math science
- sound
- astrophysics
- biotechnology
- geoscience
- digital imaging
- science fiction

PANELIST LIST: (short bios are on the ArtSci98 web-segment)

ROBERT ATKINS -Editor in Chief of the Arts Technology Entertainment
Network, writer/ critic
MIKE BATES -Director Academic & Institutional Relations for Yamaha
Corporation
GREG BLONDER -physicist, Director of the Customer Expectations Lab at
AT&T
RED BURNS -educator, Director of NYU's Interactive Telecommunications
Program
AGNES DENES -environmental artist, REO Conference commission
ASHOK DHINGRA -a chief materials scientist at Dupont specializing in
natural systems
MICHELE OKA DONER -grows materials for her public sculpture via ocean
accretion
GREER GILMAN -author of award-winning science fantasy novel,
"Moonwise"
CYNTHIA GOODMAN -curator and organizer of international exhibitions on
art and technology
RONALD GRAHAM -Director of Research at AT&T Labs, mathematician and
juggler
ROBERT GREENBERG -leading innovator in use of computers for movie special

effects
JAN HAWKINS -Director of the Center for Children and Technology, NYC
ROXANNE HILTZ -Professor & author; first to conceptualize and study
"online communities"
CHUCK HOBERMAN -sculptor and designer of "unfolding structures"
DON IHDE -one of the pioneers in the North American philosophy of
technology
CHIRSTOPHER JANNEY -creates interactive sound environments for public
spaces
DAVID KATZIVE -President of the Visual Technology Group for Ruder
Finn, NYC
BILLY KLUVER -co-founder E.A.T.(Experiments in Art and Technology),
editor and producer
KEN KNOWLTON -former Bell Labs scientist, the "father of use of
computers in animation"
JEAN Le MEE -professor and Chair of Mechanical Engineering at
The Cooper Union
MARY LUCIER-internationally renown pioneer of the video installation
genre
ROGER MALINA -astro-physicist and Editor of LEONARDO Journal
CARL MACHOVER -world-wide lecturer & consultant on computer graphics,
editor
TOD MACHOVER -composer, hyper-instrument designer and professor at
M.I.T.
PAULINE OLIVEROS -composer, musician, educator, pioneer in electronic
music
DORIS SCHATT-SCHNEIDER -mathematics & author of book on the work of
M.C. Escher
NADRIAN SEEMAN -the originator of the field of DNA nanotechnology
DOREE SELIGMANN -3-D virtual environments & web projects for Lucent
Technologies
STEPHEN SOREFF -conceptual artist and author of AGAR <www.asci.org>
(click "future" icon)
LINDA STONE -The Director of Microsoft Research's Virtual Worlds Group
HELEN THORINGTON -writer/composer, Director: Turbulence website & New
American Radio
MURRAY TUROFF -Co-author, The Network Nation; design of
electronic-based social systems
TYLER VOLK -professor geo-physics, NYU; author, "Gaia's Body: Toward
a Physiology of Earth"
GEORGE WHITESIDES -professor chemistry Harvard; research in chemistry,
physics, biology
CARL ZIMMER -Sr. Science Editor at Discover Magazine, and author of
"At the Water's Edge"
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the following URL: <http://mitpress.mit.edu/e-journals/LEA/>
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< End of Leonardo Electronic Almanac 5(12) >
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