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                   |   INTRODUCTION     |
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< This issue >

                                   Craig Harris

Michael Naimark provides some fascinating insights into the New
Media International Symposium in Moscow last November, presented in
a way which reveals a variety of cultural, philosophical and
economic perspectives. Joan Truckenbrod opens the window into the
Time Arts Department at the School of the Art Institute of Chicago.
Joan will be helping us to launch the LEA Media Arts Profiles
section of the LEA World Wide Web resource by supplementing the SAIC
profile with visuals and sound. This accompanies the new profiles
section of the LEA World Wide Web archives, which so far includes
all of the profiles published in LEA since it began in September of
1993. This section will be updated as new profiles arrive.

The following is the current list of available profiles:
    Ars Electronica Center
    Art Machines" The Sculpture of Norman Tuck
    Artifices 3
    Association Science Technologie et Societe
    AT&T: New Experiments in Art & Technology
    Binary Visions - Exhibition and Artist Profile
    Centre for Advanced Inquiry in the Interactive Arts
    Computer Animation Courses at Bournemouth University, UK
    Die Veteranen - an Art CD-ROM project
    Digital Identities - Technologies of Meaning
    Documentation of Electroacoustic Music in Europe Project
    Doors of Perception 2
    Drawing on the Brain
    Electronic Music Foundation
    File Room - an Interactive Computer Project addressing
        Cultural Censorship
    Interactive Media Festival 1994
    Interactive Media Festival 1995
    International Center for Video Creation (CICV)
    International Computer Music Association
    International Society for Computational Modelling of
        Creative Processes
    Jay Riskind
    MRIS and TIME
    National Institute of Art and Disabilities (NIAD)
    National Online Media Association (NOMA)
    SIGGRAPH 94 Special Venue:  The Edge
    STARNET - Science Technology and Art Network
    The Time Arts Department at the School of the
        Art Institute of Chicago
    Waxweb MosaicMOO
    WWW Site at The Academy of Media Arts
    Xerox PARC PAIR Project
    Zentrum fur Kunst und Medientechnologie Karlsruhe (ZKM)

Ray Lauzzana announces the creation of the International Society for
Computational Modelling of Creative Processes. And Roger Malina and
his group of reviewers and editors supply us with another strong
Leonardo Digital Reviews.

FEBRUARY 1995                          VOL 3 NO 2 **LEONARDOELECTRONICALMANAC**   2

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                |  FEATURE ARTICLES  |
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< New Media International Symposium - Trip Report >
Moscow, 24-27 November 1994

Michael Naimark
Email: naimark@interval.com
(thank you Kathy Rae Huffman, Lev Manovich, and Erkki Huhtamo)


(1) "This one's for the Internet." FLASH!

Geert just caught me with his camera. It's well after midnight
saturday and several of us from the symposium are at an artist's
loft near Moscow's center where a party is going strong. George
Legrady, a San Francisco-based artist teaching in Budapest comments
that this could be the East Village and asks which one of us should
introduce ourself to the striking woman with a partially shaved
head. (I did. Student at the Institute of Cinematography. Hates all
American films except some Woody Allen.) Geert Lovink, with the
camera, is an Amsterdam-based artist and writer responsible for
several books including one on Amsterdam squatters and their use of
media, another on radio pirates, and a new one called "Data Dandy"
about people who seek electronic soapboxes on the Internet ("a dandy
needs an audience"). If anyone is capable and mischievous enough to
get this picture out on the Net, it's Geert. But most everyone at
the symposium, both the Russians and outsiders, have Internet
accounts now.

The three-day symposium, along with an ambitious arts exhibition,
was Russia's first government-supported media arts forum. About 25
Russians and 25 outsiders participated, with a symposium audience of
about 100. The Russians were mostly from Moscow but some were from
St. Petersberg, Krasnojarsk, Kiev, and Odessa. The outsiders came
from Spain, France, Switzerland, Holland, Finland, Austria, Poland,
Czechoslovakia, Hungary, and four from the U.S. Most participants
are art academics and curators; many are also practicing artists.

Kathy Rae Huffman, an American living in Vienna and co-organizer of
the symposium and exhibition, explains that its main purpose was
both to expose the outside world to Russian approaches to new media
arts as well as to expose the Russians to the latest developments in
electronic art in the West. Kathy spent the 1980s center-stage in
the emerging video arts scene, ending up at the Institute for
Contemporary Art in Boston with David Ross (currently Director of
the Whitney Museum) and Bob Riley (currently the media arts curator
at the SF Museum of Modern Art). She left an attractive position
running one of the largest arts funds in the U.S. for Austria
several years ago. Now she finds the emerging Eastern European and
Russian media arts situation most exciting.

(2) Moscow is not Disneyland.

Disneyland, Tony Hiss once observed, was designed and built at 3/4
scale. The effect is subtle: the castles, bridges, boats, and
walkways appear unintimidating and inviting. Moscow is the
architectural opposite. The buildings are monstrous in scale, doors
and ceilings are all high, and the streets are twelve lanes wide. If
someone wanted to engineer a city to make its citizens feel small
and helpless, you'd have Moscow. It's not without its beauty - the
Moscow subways are the world's most beautiful - it's just not the
happiest place on earth, especially now.

The economic state of Moscow is one of just getting by. Door handles are broken, plumbing leaks, walls are cracked and dirty everywhere, and telephones work on a random, and often costly, basis. Inflation is runaway: the ruble went from 200 per U.S. dollar at the time of the 1991 coup attempt to 2,000 several months ago to 3,000 today. Older people on fixed incomes are having a difficult time, although many locals insist it's not as bad as the Western press makes it to be. But within the chaos new opportunities have arisen.

"New Russians," they're called, people getting rich off the chaos. They range from hard-working honest entrepreneurs with outside contacts to blatantly illegal activity, with a lot of gray area in between. The scary part to most Russians is that security has shifted to the private sector. Both criminal mafia (a word used generically here) and private bodyguards carry guns. Under communist regime at least everyone knew who had the guns, the situation today is less stable and more confusing. The New Russians are not a small group, estimated to be about 500,000 out of Moscow's 11 million. Consequently, everything is openly purchasable now, from designer drugs like ecstasy to BMWs.

(3) "Everyone here is a philosopher."

This was whispered by Minna Tarkka, a writer and curator from Helsinki, sitting next to me as yet another Russian speaker was introduced as being an X, a Y, "and a philosopher." This was largely intentional, since many of the speakers were art theorists. But Russians take their ideology more seriously than most. They've had to, since up until recently you either agreed with State ideology or you were a dissident.

Vladimir Levashov, curator of the exhibition, connected the current interest in new media art to the "Moscow Conceptual School" of the 1970s, which addressed the problematics of centers, borders, and margins (e.g., Soviet official art versus underground "margin" art). Its "collective action groups" sought "clean spaces" for performance sites - spaces not contaminated by Soviet ideology - often outside of Moscow in a field or a forest. Such activity had an "existential and psychedelic component." (A twenty-something reporter later asked me what I knew about John Lilly.) Tatjana Mogilevskaia, the organiser of the  symposium, said that new media art, based in networks, eliminates this issue since there are no longer margins or borders.

But even the dissidents have a pride in the rich art history of communist Russia, particularly cinema. Oleg Aranson from the Institute of Philosophy made the analogy between early avant garde Russian cinema and new media today, both requiring a new grammar. While it is well-known that Sergei Eisenstein formed a new grammar of montage, Aranson described how other filmmakers of that era made equally significant contributions. Dziga Vertov, best-known to the West for his documentaries, created a "new sensuality" based on "anti-bourgeois," "non-anthropological," "language of communist futures." Alexander Dovzhenko's seminal 1930 film "The Earth" was "almost tactile," suggesting an expansion of sensual perception.

Some of the presentations were lofty, with periodic references made to Ludwig Wittgenstein, Walter Benjamin, Marshall McLuhan, Umberto Eco, and Jacques Derrida. (Contrast this with the more religious and grounded attitude of North American Natives, some of whom mocked such loftiness at the Art and Virtual Environments conference at the Banff Centre). One Russian media critic hypothesized that because today's video cameras are toy-like, that video is doomed to "an

isolated aesthetic." A lecturer from the Institute of Philosophy condensed her "three hour lecture" on how, as art turns from classical to interactive to telematic, we must "find the treachery and lies and turn to play."

(4) What did they think of us?

Presentations by outsiders were intermingled with the Moscovites throughout the symposium. Roughly speaking, ideological similarity was proportional to distance traveled. Ryszard Kluszczynski, a film professor and curator from Warsaw, argued that autonomous or self-adaptive artworks pose a fundamental dilemma to the modernist view of artist-as-creator since once the rules are set, these artworks are "out of control" of the artist. He showed a short video of "A-Volve" by Christa Sommerer and Laurent Mignonneau and noted that one of the major debates at last year's Ars Electronica was who should control an artwork, the artist or the audience.

Most of the outsiders showed video. Alla Mitrofanova, a Russian critic and theorist but from the more secular St. Petersburg, showed a video performance of a naked Amsterdam artist being torched in his back by a blast from a flame thrower (in the genre of Stelarc and Survival Research Labs), then drenched with cold water spray. Piotr Krajevski from Poland's "WRO" Festival showed another performance tape of a half-naked artist videotaping his body, then smashing open the cassette and wrapping himself with the videotape. Michael Bielicky from the Academy of Fine Art in Prague showed some of his student's work, but not before pointing out that "robots" (RUR), film integrating live performers (Laterna Magica), and interactive cinema (EXPO '67) were all Czech creations. Erkki Huhtamo, curator of the ISEA artshow in Helsinki, showed video of Paul Sermon's telematic sofa, which networked two sofas together creating a single "shared" one. Andre Iten from Geneva showed some locally-produced performance and interactive work.

Of the four Americans invited, three had some Russian or Eastern Europe connection. Lev Manovich, who was born in Moscow and currently teaches electronic media at the University of Maryland, spoke of the history of the computer screen, anchoring it in the MIT Lincoln Labs' development of radar to detect the "Red Menace." George Legrady, a San Francisco-based artist currently teaching at the Academy of Fine Arts in Budapest, showed his multimedia piece, a personal album fitted in the layout of the Hungarian Propaganda Museum. Computer industry observer Esther Dyson, speaking bilingually, gave a lively presentation asking for help with her new premise: economy on the Internet is based on scarcity of attention rather than scarcity of goods, that people will pay to be listened to rather than to read. One Russian in the audience reminded her that there are two different opportunities for artist's support: sponsorship and shareware. "Shareware IS sponsorship but by many people" she replied. Another Russian spoke that if Stalin had his files on computers, things would have been much worse. "If computers existed then," Dyson snapped back, "Stalin would never have gained power."

(5) The Artshow

While the symposium was talk rooted in theory, the art exhibition was production rooted in practice. For one thing, there was equipment, partly due to the Soros Centers for Contemporary Arts supporting a "New Media Art Lab" in Moscow and partly due to support from the lucrative new commercial studios. One local says "there was a ten year standstill here" up until 1986, when the first graphics computer arrived in Moscow. Doors began to open in 1989, and by 1991

386/486 computers with bootlegged copies of graphics software began to appear (in sync with an emerging TV advertising market for flying logos). The first SGI machines arrived in 1992. Now there are about 30 SGIs, including several Onyxes.

Like everywhere else, uneven access to equipment has resulted in a gap between the independent artists and the commercial studios. The tension was subtle to outsiders but not unfamiliar: artists staffing these studios have access and experience but less time and control (and attitude) as the independents. Consequently, the works in the artshow ranged from high-end videographic/computer-graphic compositions to home video. All works were selected months ago from submitted proposals.

None of the artworks were explicitly interactive (in terms of having any electronic input) and all were installations in their use of multiple media, physical artifacts, and space. Of the seventeen artworks, all but two used pre-recorded video (the exceptions being slide projection and holography).

A personal favorite was by Oleg Migas, an artist from Odessa, who computer-altered a video image of a bather in a bathtub shot from above to make the plane of the water opaque and metallic, like a flat metal casting with holes for the head, arms, and knees to emerge. In front of the video monitors was an actual metal cast, identical to the virtual one in the image. Another favorite of a similar ilk was a "VR" parody piece by Alexei Shulkin of Moscow. It was a small low ceiling about four feet high with a hole in which to stick your head up. What you saw was an "immersive" projection on the inside wall ten feet in front, video from a zany wobbling camera of a street scene. This was one of the few humorous works here.

The visually strongest work at first sight was called "Cloud Commission" by Tatjana Detkina and Arkadij Nasonov, both from Moscow, consisting of two video monitors facing each other, each tethered with thick rope to large bird models suspended from the ceiling. The imagery on one monitor was of pages flipping and on the other, scenes relating to the pages.

The most finished (i.e., polished) work was an installation by Moscow artist Vladislav Efimov, which consisted of six video monitors in a line and a seventh above and to the left. On the six monitors were black and white images of various meter gauges (electrical, temperature, etc.) computer-altered to have auras around their borders. On the monitor above, a hazy black and white image of the whole earth.

The rawest, and most blatantly political, piece was by Moscow artist Alexander Revizorov. In the center on a pedestal were several canisters labeled to look very poison, like pesticides. To its left was a slide projection of a normal person and to its right, a slide projection of a mutated person.

An installation about trains and travel was made by Krasnojarsk artist Oleg Ponomarev, using video as well as hand drawn sketches hung on a wall (appearing as if made by different people, non-professionals). This installation was intriguing but inaccessible, and it was difficult to determine whether this was intentional or not. (We later learned it was an artistic experiment involving the contributions of many ordinary commuters.)

The most hardware-intensive work was by Alexej Isaev of Moscow, using eleven monitors (each with its own VCR), ten arranged in a circle around the eleventh. The imagery was cyberpunk, gory images

of eye and brain surgery surrounding the center, where every hour the artist would take part in a performance with the video material.

(6) The Jury

The jury's role was to award three main prizes (all-expense-paid trips to Ars Electronica in Linz) and two honorary mentions ($250 cash). It consisted of a French, a Finn, a Dutch, a Pole, three Russians, and me. Two other Russians were invited but apparently declined (awards and cash were involved, high stakes).

This was a tricky and challenging jury. On one level, we (the outsiders) were the experts, with experience and, presumably, well-developed senses of aesthetics. On the other hand, who were we to impose an outside voice knowing so little of the culture and the contexts?

We had to discuss with our Russian counterparts.

We first went around the table each frankly describing what works we liked and disliked the most. Then we heard some comments from the Russian jurors about the contexts (about the work, about the environment, about the artist), then we'd discuss more.

My two favorites, the bather and the VR parody, received mixed acclaim from both the outsiders and Russians. Admittedly they were both formal, and dealt primarily with the line between actual and virtual. Another personal favorite was the aura piece, which I also described as formal. Louis Bec, the French juror (from the Ministry of Culture), elaborated that it was more contemplative than formal. I agreed.

One of the lively discussions centered around whether being "a finished piece" should be necessarily considered an attribute. We agreed that emerging works should be considered even if they may be a bit rough.

Another discussion centered around reflexivity, i.e., how much the piece is about its medium. Piotr Krajevski, the Polish juror, earlier showed the video work of the artist wrapping himself in videotape - very reflexive. I argued that early video art in the U.S. was almost entirely about TV, that this was a sign of an immature medium, and we outgrew it. Most everyone agreed but also believed that it was a necessary step. I couldn't disagree.

Geert Lovink, the Dutch juror, felt strongly that equipment-heavy works send out a bad signal, suggesting that the more technology, the better the work. I agreed. No one else did.

Our final selections: main prizes went to birds, auras, and pesticides; honorary mentions to surgery and trains.

We collectively cobbled an "official statement" for Erkki Huhtamo, the Finnish juror who we unanimously appointed Chairman, to read. It went like this:

We hope this competition will encourage more self-confidence and help give art a more central role here. It is important to view this exhibition as the first of several, to mature, to become the beginning of a tradition. We tried to emphasize two things: quality and maturity. But also promising emerging work even if a bit raw. Most important, we feel that the artist's message and intent should drive the technology, not the other way around.

We all felt good about the statement.

(7) Back at the party . . .

I asked the outside jurors how they felt about the final selections
and everyone said "OK." The Russians involved in the organizing all
felt good.

Everyone was partying now. Spirits were high. We all had a chance to
get to know each other quickly and intensely, we all came from
drastically different places, and there were no bitter fights.

Why should there be? This wasn't about life, it was about art.
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          |   PROFILES   |
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<   The Time Arts Department at
    The School of the Art Institute of Chicago  >

Joan Truckenbrod, Chairperson
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The School of the Art Institute of Chicago
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The Time Arts Department at The School of the Art Institute of
Chicago is an interdisciplinary collaboration among the Film, Video,
Sound, Performance and Art and Technology Departments. The Sound
Department includes analog and digital sound composition. The Art
and Technology Department focuses on artwork that has an electronic
or computer component. Courses in this department include Computer
Animation, Interactive Installation, Kinetics, Digital Video,
Telecommunication Arts, and Computer Imaging. The faculty includes
artists from all of these areas. The Time Arts Department provides a
forum for developing curriculum, projects and events that cross the
boundaries between these time-based media, creating links or
building bridges between these disciplines. In this program, a
multidisciplinary vocabulary integrating the forms from each
discipline is emerging. Our objective is to formulate the critical
dialogue necessary to address the aesthetic issues involving these
integrated modes of artistic expression.

The goal of the Time Arts Department is to create a forum for
investigating the critical issues that erupt at the intersection of
these time-based media. Students work with a variety of media,
combining them in a manner that corresponds to their artwork. The
second goal of the program is to stimulate interdisciplinary,
collaborative projects, events and curriculum. The Time Arts
Department provides the opportunity for faculty to work together on
projects and resulting curriculum. Faculty from different
departments are developing and co-teaching cross-disciplinary
courses. Courses include an Intermedia Sound Composition course for
time-based media, and a course titled Intermedia Collage which
integrates digital image processing with the use of the optical film
printer. In the Fall of 1995 we will add a course titled Time Arts
Workshop in which students will investigate constructs of artmaking
in time. Students will choose the media for their projects based on
their own individual ideas. Courses under development include a
course titled Virtual Spaces which will investigate the creation of
unique virtual realities. This will be a course created and taught

collaboratively by the Interior Architecture Department, the Time Arts Department and the Art and Technology Department. Another course under development is a course in Teleperformance in which students will create performances that explore issues of space, a sense of place, the issue of body in telespace, and collaborative performances across cultural boundaries.

The Time Arts Department is developing an interdisciplinary studio in which students and faculty work with sound composition, video, film and computer imaging and animation in the same studio. We are also involved in a collaborative project with Silicon Graphics for experimental investigations in the Arts. SGI computers provide artists with an intermedia studio. This artwork provides a forum for a critical dialogue about the aesthetic issues. The SGI based studio at SAIC is interdisciplinary as artists use these computers to create visual images and sound compositions, synthesizing them into animations. In addition, these computers have built-in video cameras and provide live teleconferencing capabilities. Teleconferencing, as an integral part of these computers, facilitates collaborative artmaking with artists around the world. Using this capability we can also explore concepts of teleperformance with a synthesis of body, and the tele-body in space. This studio integrates modes of expression that are generally separate. Using the SGI computer the artist incorporates the lens of the camera through the use of the video camera and scanner, the stroke of the brush using the drawing tablet and pen, and the gesture of the body through motion capture hardware, and through teleconferencing.
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<   International Society for
    Computational Modelling of Creative Processes  >

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The International Society for Computational Modelling of Creative Processes was formed in October of 1994. Considering recent developments in generative grammars, genetic  algorithms and other research in computer and cognitive science, this professional society was formed to promote the development of formal representations  for creative processes and the implementation of these processes on  computing machines.

The purpose of this international, interdisciplinary society is to promote the development of formal representations for creative processes and the implementation of these processes on computing machines. It is devoted to research in all  forms of computational modelling of creative processes.  The society  welcomes researchers employing computational techniques to model the  synthesis of literary and non-literary texts, music, and visual works  including art, dance, theater, architecture and all types of design.

This multidisciplinary focus is reflected by the board of directors and the  editorial board of its journal, _Languages of design_, which includes  linguists and literary theorists, music theorists and composers,  computer scientists and researchers in artificial intelligence, artists,  architects, and art critics. The special interests of the society focuses on  formal design theory, generative grammars, shape grammars, computational musicology, and computational aesthetics. All forms of computational  modelling are reported in the society journal including formal languages,  finite state automata, grammatical inference, pattern recognition, cellular

automata, semantic networks, connectionism, and syntactical
analysis. A  broad variety of analytic perspectives are represented,
including syntactics,  semiotics, deconstruction, hermeneutics,
stylistics, narratology, philology,  morphology, prosody, harmony
theory, formal musicology, and performance  analysis.

Society membership is open to anyone interested in current research
applying  computational methods to the synthesis of words, images,
sounds  and movement. The society collaborates with educational
institutions, commercial  research enterprises and other
professsional societies through its  publications, the promotion of
special events, participation at symposia,  and an annual awards
program. The first annual prize to be awarded by  the society will
be the  "1996 Award for the Best Computational Model of  a Creative
Process."
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        |  LEONARDO DIGITAL REVIEWS  |
        |       FEBRUARY 1995        |
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<  Editorial: Sir Ernst Gombrich  >
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Sir Ernst Gombrich
Leonardo Honorary Editor
London, England

"Art is long and life is short."  That famous saying was coined more
than two thousand years ago by Hippocrates, the founder of Greek
medicine, and subsequent developments have proved him right.  For
the "art" to which he refers is the art of healing that has indeed
been long in growing and developing and in the process,
incidentally, made life gradually a little less short.  In his
period and long after, the notion of "art" denoted any skill based
on knowledge; in other words, both what we now call "science," and
what we call "art."

It may not be inappropriate to recall these origins in a journal
that has set itself the aim of bridging the rift that has meanwhile
come to separate these two branches of human creativity. It is
precisely those of us who welcome this effort who sometimes feel
that artists would do well to remember the words of Hippocrates.  No
scientist has to be told that any progress at which he aims must
take as its starting point the present state of knowledge.  Artists
sometimes appear to hope that they can start from scratch and create
a new art by one leap of the imagination.  One may admire the
ingenuity, wit and courage of such attempts, and yet feel that this
new art will remain stillborn precisely because it lacks the
background and support of a tradition.  I fully realize that to some

the very word tradition is like a red rag to a bull, but to
emphasize the role of tradition, in art as well as in science, is
not tantamount to a longing for the good old days.  It can be
supported by purely theoretical considerations: our aesthetic no
less than our cognitive experiences are inseparable from our
expectations.  Both the thrill of surprise, and the satisfaction of
familiarity, rest on our previous knowledge, belief and experience.
Whether we read a scientific paper, watch a game or visit an
exhibition we can never understand what is going on without a
minimum of information previously acquired.  Learning to understand
is a complex process, hard to explain in a few words, but we all
have experienced its difficulties and its pleasures.  I do not want
to be misunderstood.  New art forms may certainly emerge in the
future as they have emerged in the past-- -I am thinking of
calligraphy in China, or instrumental music in the West.  No doubt,
also, science and technology may still contribute to such
developments, as has indeed happened with photography and the
cinema, but in all these cases it has taken time for standards to
develop and creativity to be appreciated.  It was for this reason
that I concluded my book on decoration and pattern-making, which I
called The Sense of Order, as follows:   @ extract = The study of
the pattern-maker's craft no less than the study of any other art
suggests that what we need is patience.  It takes time for a system
of conventions to crystallize till every subtle variation counts.
Maybe we would be more likely to achieve a new language of form if
we were less obsessed with novelty and change.  If we overload the
system we lose the support of our sense of order.
================================================================
REVIEWS
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<  Book Review: Symmetry  >
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Symmetry, A Unifying Concept; Istvan Hargittai, Magdolna Hargittai;
Shelter Publications, Inc., Bolinas, California, 1994, distributed
by Ten Speed Press; ISBN 0-936070-17-X (Shelter Publications), ISBN
0-89815-590-8 (Ten Speed Press)

Symmetries of Culture, Theory and Practice of Plane Pattern
Analysis; Dorothy K. Washburn, Donald W. Crowe; University of
Washington Press 1988, second printing 1992 (pbk.); ISBN 0-295-
97084-7

Wherever form exists, relationships of adjacency, separation,
continuity, and rupture arise. The transformations which govern
these relationships we call symmetry. Science and myth both seek to
reveal the symmetries that govern the cosmos. Through the perception
of underlying symmetries, what once appeared gratuitous becomes
meaningful, confusion submits to understanding, and order emerges
from chaos. Yet symmetry also fulfills a homely purpose, enlivening
functional surfaces with ornament and pattern, framing space with
architecture and time with music. Perhaps even more than the
production of tools, the creation of pattern appears as a uniquely
human act.

Symmetry, A Unifying Concept and Symmetries of Culture both examine
visual symmetry. Where the former provides a survey of a wide range
of symmetries, drawing examples from both the natural world and the
products of human culture, the latter concerns itself exclusively

with two dimensional patterns, which may all be derived from the 17 crystallographic motion groups.  A collaboration between a mathematician and an anthropologist, Symmetries of Culture is designed as a tool for cultural anthropologists. Both are excellent source books for the artists and designers, with hundreds of black and white illustrations.

Structural chemists who have devoted much of their free time to documenting the varieties of symmetry they have encountered on their travels, Istvan and Magdolna Hargittai have produced a lively and engaging volume, which carefully leads the reader from chiral pairs on to the 17 crystallographic groups, the Fibonacci series, spirals and helices, and up to the symmetries of three dimensional space. For students of design, this book would be an excellent point of departure, for it not only covers a wide field, it also provides a sense of continuity and progression, along with some wonderful surprises such as quasicrystals and Penrose tilings, chiral dissections of an apple, or buckminsterfullerene molecules.

Symmetries of Culture begins with a critique of the analysis of pattern as an anthropological technique. The authors argue that the classificatory system of "types," which sees particular use in archaeology, depends upon the investigator's, not the subject's, frame of reference, and upon data-specific traits which cannot easily be universalized to allow us to draw cross-cultural inferences. The structural model of linguistics suffers from a similar dependency on data-specific traits, since we cannot yet adequately define what the universal "phonemes" and "morphemes" of patterns might be. Citing evidence that the preferential use of subsets of the 17 crystallographic groups may be culturally determined, while descriptions of pattern based only on individual "motifs" may entirely miss the emergent use of new symmetry groups to organize them, they suggest that a classificatory system based on the 17 crystallographic groups may shed new light on the use of pattern in different cultures, both as a historical, descriptive tool, and as a analytic tool capable of revealing isomorphisms with other aspects of a culture.

The rest of the book provides precise flowcharts for analyzing patterns mathematically, along with hundreds of examples selected from world cultures, and step by step analyses of patterns whose symmetry group may not be apparent at first glance. Simply as a source book for samples of patterning from many different cultures, Symmetries of Culture provides a wealth of material. A mathematical concept here reveals a cross section of world cultures. As the Hargittais suggest, symmetry is everywhere, in everyday objects and in cosmic events--one hopes that the analytic techniques that Washburn and Crowe propose may eventually reveal the deeper cultural sources of pattern-making, linking its ornamental and quotidian use to mythopoetic and scientific insights.
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< CD Rom Review: Sequencia, The 'Light-Rock' of DNA  >
Reviewed by: Barbara Lee
Bitterbyte@aol.com

I'm sitting at my Mac listening to Sequencia.  The music feels comfortable, like the low steady purr of my cat just before I surrender to sleep.  DNA 'listening' began in 1988 by Dr. Deamer, Professor of Biology at U.C. Santa Cruz.  He published two tapes, DNA Suite and DNA Music, based on examples of "mapping" tones with four DNA bases (adenine, thymine, guanine and cytosine) to derive music.  As a composer Susan Alexjander became intrigued by his work and proposed they try to measure the actual molecular vibrations of the DNA bases.

By utilizing an infrared spectrophotometer (to measure which
wavelengths of infrared light each base absorbs) they identified a
unique array of approximately fifteen wavelengths per base. Each
base has a slightly infrared light each base absorbs) they
identified a unique array of approximately fifteen wavelengths per
base. Each base has a slightly different atomic structure causing it
to vibrate in a unique fashion which effects the way it absorbs
infrared light.  Once the absorbencies are measured, plotted on a
graph, and read as numbers they represent a very fast and very high
wave-length "scale" on the light spectrum.  The relation of these
numbers to each other is their ratio and the ratios are what is
translated into the sonic spectrum.

How does a light vibration become sound?  By adhering to the Law of
the Octave. Any variations of sound (or light) can be doubled or
halved, and the same pitch (light frequency) will result. The only
thing that will change is the octave of the sound.  In this way, the
rapid vibrations of DNA can be halved (about 35 iterations) into our
range of hearing. The span of each DNA base is about two and a half
octaves.

Is this musical? Susan believes it is.  The music for synthesizer,
tabla, cello, violin, and voice is based entirely on a tuning system
created out of her collaboration with Dr. Deamer.  In Sequencia, Ms.
Alexjander incorporates about sixty measured pitches to create
amazing combinations.  Most of these pitches are microtonal; their
frequencies occur in the areas between the half-tone, or half-steps,
of our normal musical scale.  Historically microtonal pitches are
used within the cultures of the Indian subcontinent, the Far East
and the Middle East.  In reaction to Susan's tunings some listeners,
but not all, describe sensations of expansiveness, opening,  and a
naturalness.

Ms. Alexjander received her Masters from composition and theory from
San Jose State University and joined the faculty from 1985 to 1991
to teach music theory. Presently she teaches privately and is the
director of Science & The Arts. Susan has a high degree of certainty
that each of us is creating wondrous combinations of light and sound
within our bodies, playing off and in relationship to each other.
Finally I can tell my mother, "I'm not ready to have a child now
because my body is too preoccupied with creating wondrous light and
sound compositions". Sequencia is the first in a series of
recordings entitled Logos which explores new harmonies and
relationships of vibration found in nature. For more information
about Sequencia or subsequent recordings, please contact Science &
The Arts, Box 8162, Berkeley, CA, 94707,USA or call (510) 254-3825.
******************************************************************
<  Exhibition Review: Exhibition catalogue: Images en moviment
   (Moving Images), Electronic Art Exhibit.  >
...............................................................
Reviewed by Rainer Volz
E-mail: 100016.1300@compuserve.com

Exhibition catalogue: Images en moviment (Moving Images), Electronic
Art Exhibit.
Edited by Heinrich Klotz, Zentrum fuer Kunst und Medientechnologie
Karlsruhe and Oktagon Verlag, Muenchen-Stuttgart 1992. 160 pp.,
illus., Hardback. Catalogue in Catalan, English, Spanish and German,
from an exhibition at the Fondacio Joan Miro, Barcelona, July 2-
September 6, 1992.

The works presented in this catalogue are a cross-section of the
collection of the ZKM (Centre for Art and Media Technology,

Karlsruhe), which represents most of the current trends in media art, video installations, interactive sculpture and holography. The focal point of this selection is the contrast between the "moving images" created by media artworks and their static counterparts in the traditional arts. Therefore, video-installations of artists such as Marie-Jo Lafontaine or Nam June Paik form the majority of exhibits. Heinrich Klotz emphasizes in his introduction "Aesthetics of Electronic Art" the difference between the polycentric videosculpture, with its competing monitor-images, against the single static painting, which limits the perception of the observer to its canvas.

Interactive art is also prominent in this selection. Works like the electronic sculpture "Petting," by Keep Aafjes, break down the boundaries between Art and Life when they are used by the normally passive visitors of galleries and museums. Like the video-images, they traverse the limits of fine arts and provide links to both performing arts and entertainment. The selection for this catalogue reflects a variety of perspectives on these trends.

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< Book Review: Digital Mantras by Henry See >

Digital Mantra, Steven R. Holtzman, MIT Press, Cambridge, Mass. 1994.
Reviewed by Henry See
E-Mail: henry@pd.org

"If you are tempted to functionalism, I believe you do not need refutation, you need help." John Searle, "The Rediscovery of the Mind," p 9.

"Digital Mantras" is so imbued with the functionalist point-of-view that I have to declare myself--not in the name of "objectivity," but rather in the name of a crusade against the cognitive paradigm. The stated goal of Holtzman's work is to "establish an aesthetic foundation for the use of computers for creative expression in language, music, art, and virtual reality." But the proposal is so wrong-headed and profoundly contrary to what I believe is the direction we should take, that a crusade is a minimal response. The proposed aesthetic is an a-human, if not inhuman proposition, a position which makes of art (such an essentially human act), an act irrelevant to humans. It is a proposal which ultimately dispenses with the human altogether.

At the same time, the proposal is so firmly anchored in the cognitive paradigm, an outlook so readily accepted by many proponents of "cyberculture," that although the goals as such can never be reached (because the fundamental tenets of functionalism and strong AI are wrong), the associated values are proliferating. The propagation and selling of cyberculture is the propagation and selling of these values. In this sense, "Digital Mantras" is an essential book -- a critical appreciation of it is a vaccine against the cognitive paradigm and its popular expression, the ideology of cyberculture.

What is the "ideology of cyberculture"? I would list the following as among its principle traits: A fascination with technology and a belief that there are technological solutions to the major societal problems. A blurring of distinctions between human and machine -- the belief that the brain is a computer, involved in information processing, that given the appropriate program, a computer can be made to have thoughts or feelings. The belief that there are

technological solutions to the problems of life, of living, of being
human, through software or hardware extensions to our central
nervous system.  All of this is wrapped up in the entrepreneurial
proselytizing of the "free market" embedded within a "post-modern"
costuming of the American frontier myth in order to conquer the
world market for the computer-entertainment complex. Sell the dream
and the computer will follow through the door.

The Argument.
The following are the main points of Holtzman's argument: Twentieth-
century art has laid out the foundations of the formal elements of
creation. With this base, we can produce computers and software
which will embody these principles, rules, and grammars. We are
entering a new age where the act of creation itself will be
transformed by computers-- not just as intelligence amplifiers, but
as agents of creation themselves. Creation will be unhindered, no
longer restricted by its tools. Art must be of its time. We are in
the digital age, therefore the art of this age must be digital. But
beyond that, the art must be idiomatic to the computer. We must
elaborate our art out of the 0s and 1s and the basic manipulations
of the computer. The power of the computer as a modeler of the
abstract, together with new creative tools, will permit us to view
more clearly the isomorphisms of our structures, in order to better
penetrate the perfect structure of the universe. This pursuit of the
structure of the universe is an ethical quest.

(Please see  Leonardo Digital Reviews WWW site where the balance of
this  review is published URL:
    http://www1-mitpress.mit.edu/Leonardo/reviews/ldr_feb.html)
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<  LEONARDO DIGITAL REVIEW NOTICES  >
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 Leonardo Digital Reviews (LDR) is an electronic 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 newmedia 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.  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, CDROM, CDI,
on-line, diskette, WWW/MOSAIC, ...).
b) Reviews of print publications, events, conferences, and exhibits
dealing with art, science and technology. Accepted reviews will be
published in Leonardo Digital Reviews, which may be accessed on the
World Wide Web (URL:
    http://www-mitpress.mit.edu/Leonardo/)

Reviews of key works will also be considered for publication in the
Leonardo Journal and Leonardo Music Journal published in print by
MIT Press. Selected reviews will also be republished in the Leonardo
Almanac book published by the 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, 236 West Portal
Ave,#781, San Francisco, Ca 94127, USA.Event and exibit organisers,
and authors of virtual/electronic publications and events interested
in having their (physical) publications considered for review in
Leonardo Digital Reviews should mail a copy of the publication to
Leonardo, 236 West Portal Ave,#781, San Francisco, Ca 94127, USA.
Event and exhibit organisers, 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 davinci@uclink.berkeley.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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<  LEONARDO DIGITAL REVIEWS CLASSIFIED ADVERTISEMENTS  >
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davinci@uclink.berkeley.edu for information on rates and conditions.
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Landscape, Media, Metalwork, Ornament, Printing,  Product, Set,
Textile, Theatrical, Typography, Urban, Vehicle, and Video
ISSN 1068-7688 /  ISBN 1-885225-00-8 Price: US$60.00
Penrose Press, P.O.  Box 470925, San Francisco
CA 94147, USA, fax: +1 (415) 567 4165
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AUTHORS AND READERS-PLEASE SEND COMMENTS, DISAGREEMENTS OR
ADDITIONS TO THE EDITOR-davinci@uclink.berkeley.edu

<  END LEONARDO DIGITAL REVIEW              FEBRUARY 1995  >
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                |  PUBLICATIONS  |
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<  Experimental Radio - Special Issue of The Drama Review  >


Allen Weiss, Guest Editor
The Drama Review
New York University
721 Broadway, 6th Floor,
New York, NY  10003


If considerations of mainstream radio have been for the most part
excluded from aesthetic and cultural discourse, the history of
experimental radiophony has until recently been utterly repressed.
At  this moment when academic recognition is belatedly occurring, we
offer  the following project as an attempt to complicate such
matters.  Thus, in  this special issue of The Drama Review, we are
concerned with conditions  of transmission, circuits,
disarticulation, degeneration, metamorphosis,  mutation -- and not
communication, closure, articulation, representation,  and
simulacra.

The guiding theme is radiophonic experimentation, in all of its
modes and  manifestations:  ontological heterogeneity, radiophonic

specificity, disjointed signifiers, broken circuits, cognitive feedback, electronic parasites and viruses, telephony, sensory and technological overload, electric shocks, dead air, disembodied voices, audio uncanny, linguistic contortions, noise, artificial voices, spiritualist macabre, aleatory constructs, musical interludes, concrete cut-ups, disappearance and resuscitation, postmodern psychopathologies, talk radio populism, guerilla broadcasting, genre mixing, radio eros, pop tactics, multiple identities, hardcores, softwares, role playing, gender shifting, virtual phantasy, and especially etcetera...

We seek all types of documentation and intervention: transcripts, scores, tales, dialogues, histories, scripts, projects, critiques, theories, characters in search of authors, authors in search of characters, etc. Participants will include Toni Dove, Christof Migone, Gregory Whitehead.

Submit complete typewritten manuscripts (along with xeroxes of any accompanying visual material, musical scores, technical specifications, etc.; maximum 4000 words, though short pieces are preferable) by August 15, 1995. Please send texts in English if possible; all foreign language submissions will be considered according to possibilities of review and translation.
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         |  ANNOUNCEMENTS  |
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< Workshop on Art and Visual Mathematics >

Michele Emmer
Dipartimento di Matematica
Universit` Ca' Foscari
Dorsoduro 3825/E, Ca' Dolfin
30123 Venice, Italy
Tel: 39-41-5205876
Fax:39-41-5221756
Email: emmermve@unive.it

A workshop on "Art and Visual Mathematics" will take place during the third Interdisciplinary Symmetry Congress and exhibition of the ISIS-Symmetry by the title "Symmetry: Natural and Artificial". The workshop will have a duration of two days and it will not be strictly related to the theme of Symmetry. The Conference by the title "Symmetry: Natural and Artificial" is the third Interdisciplinary Symmetry Congress organized by the International Society for the Interdisciplinary Study of Symmetry (ISIS-Symmetry). It will take place in Old Town Alexandria, near Washington D.C. August 14-20, 1995.

ISIS President:
Dines Nagy
Institute of Applied Physics,
University of Tsukuba
Tsukuba Science City
Ibaraki-ken 305, Japan
Fax: 81-298-53-5205
Email: nagy@bk.tsukuba.ac.jp

Site Coordinator:
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Executive secretary:
Gyvrgy Darvas
Symmetrion, The Institute fro Advanced Symmetry Studies
P.O. Box 4, Budapest, H-1361 Hungary
Tel: 36-1-131-8326
Fax: 36-1-131-3161
Email: h492dar@ella.hu

In order to receive a copy of the first circular people have to
contact Pardavi or Darvas. People interested in the workshop must
send a  camera ready abstract of one page on A4 size page, one copy
to Emmer and one copy to Darvas.

Deadline: March 31, 1995
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<  Musiques en Scene 1995 - Sound & Space  >

Musique en Scene - GRAME
6 Quai Jean Moulin, BP l185
69202 Lyon Cedex 01 France
Tel: +33 - 72 07 37 00
Fax +33 - 72 07 37 01
Email: GRAME@Applelink.Apple.com
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Each year, on the occasion of the "Musiques en Scene" festival in
Lyon, France, the Multidisciplinary Music Meetings intend to tackle
a theme directly concerning music practice. They will endeavour to
draw up an panorama exhaustive enough to allow participants to
acquaint themselves with present scientific theories about the
subject, current products and researchs, to compare used
technologies and practices, and to understand better aesthetics
issues raised by those works.

Sound and Space is the theme for the first edition that will take
place in the Palais Bondy on March 31 and on April 1st. Those issues
are linked to material and aesthetic conditions of electroacoustic
music; they belong to the deep currents which have ponctuated its
development and have set the terms of its diffusion. However, those
concerns were already present in the music history, in other forms.
Today, they take over new applications.

The opportunity to receive, at home or in a cinema, audiovisual
programs carrying several audio channels, the mass diffusion of
multimedia products, and the passion for virtual reality : so many
changes that give reflection rise again and put it back in a very
different economic and technical context.

About fifteen reports should enable to take stock of the
neurophysiological, psychological and acoustic foundations of the
sound perception in space, and to give an outline of of norms and
tools proposed by industry and research centers, as to define the
impact in the evolution of music practice.

Some round tables, some expositions and some equipment
demonstrations are also planned, as well as two thematic concerts
implementing spatializing systems. Some special careers will be
presented through the works of Jonathan Harvey, Ahmed Essyad, Pascal
Dusapin and Pierre Henry. More than 50 composers will be played
during the festival.

The Multidisciplinary Music Meetings are organised by the

Departement Recherche de la Direction de la Musique et de la Danse
du Ministere de la Culture, and by GRAME. Additional support comes
from Mission pour la formation continue Musique et Danse de la DRAC
rhone-Alpes, Classe d'acousmatique du CNR de Lyon, Departement SONUS
du CNSM de Lyon, Roland(France), R+R Audiovisuel, Lyon National
Orchestra, Theatre de la Renaissance and Espace Musical.

The official language of the meeting is French.
*****************************************************************
<  Solart Global Network World Wide Web  >
Theo Ferguson
Email: tferguson@igc.apc.org
URL: http://www-mitpress.mit.edu/Leonardo/solart/solartHome.html

The Premiere of the Solart Global Network World Wide Web home pages
are now available on the Leonardo World Wide Web site.  The Solart
Global Network is an  international group of artists using solar
energy in their artwork.  These artists  seek to stimulate the
global cultural imagination towards use of renewable energy
resources. Contact Jurgen Claus: jclaus@khm.Uni-koeln.DE if you are
an artist  using sunlight in your artworks.

Theo Ferguson, editor of the www-mitpress/leonardo/solart home
pages, will be  coordinating American solar artists (North, Central
and South) who use more  fundemental forms of solar energy in their
artworks. A survey will be sent out  soon.  Contact Theo Ferguson so
that you can be  sent a survey form and added to the list of artists
participating in the Solart  Global Network.
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            |  JOB ANNOUNCEMENTS    |
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<  Berklee College of Music - Music Synthesis Department Chair  >
Music Synthesis Chair Search Committee
Office of the Music Technology Division Chair - Box #288
Berklee College of Music
1140 Boylston Street
Boston, MA 02215 USA

The Music Synthesis Department within the Music Technology Division
is now accepting applications for the twelve-month position of
Department Chair.  Duties include establishing and assessing
departmental goals annually; formulating department policy;
overseeing the development of curriculum, faculty and staff hiring,
assignment and development, and student advisement.  The Chair
manages three music synthesis labs, a lecture/performance hall, and
MIDI-equipped ensemble rooms, oversees the department budget, and
maintains music industry relations.  The Chair teaches departmental
offerings and, in the role of manager, interacts with faculty,
administrators, and students of other departments of the College.
Requirements for the position include a Master's degree and/or
equivalent professional experience.  Background in teaching and/or
college administration is required.  Applicants must have a thorough
knowledge of current practices and technological advances in the
discipline of Music Synthesis.

Please send resume, two letters of recommendation, a disc or tape of
recent productions or performances, and other appropriate
documentation along with your letter of application by March 15,
1995.

Berklee College of Music is an Equal Opportunity Employer.
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&lt;  Computer Artist - University of California, San Diego  &gt;

Kim MacConnel, Chair
Visual Arts Department (0327)
University of California San Diego
9500 Gilman Drive
La Jolla, CA 92093-0327

COMPUTER ARTIST.  Assistant Professor, tenure-track, to entry
Associate Professor with tenure.  Rank and salary commensurate with
qualifications and experience and based upon UC pay scales.  We are
seeking an artist whose work demonstrates a significant engagement
with computer based processes in the realm of contemporary art.
Knowledge of networked UNIX (Silicon Graphics) and Macintosh
environments is required along with established work in several of
the following areas: digital imaging and publishing, multi-media
authoring, graphics programming in C or C++, computer networking,
computer animation and/or computer based installation. Teaching
experience required in several of these areas at undergraduate and
graduate levels. MFA or equivalency required. Candidate should have
a national exhibition record, and be able to demonstrate an in-depth
understanding of computing and it's relationship to contemporary art
discourses.  Candidate will actively participate in the ongoing
development of facilities and curriculum. The university provides a
number of opportunities for doing advanced research work in
computing in the arts, within a department of broad
interdisciplinary concerns.

Send letter of application, curriculum vitae, names of three
references (do not send letters of recommendation and/or placement
files) and evidence of work in the field.  This evidence may be in
the form of slides, tapes, disks, publications and/or public
lectures and should be accompanied by return mailer and postage.

All applications received by March 1, 1995 or thereafter until
position is filled will receive thorough consideration.  Please
reference position number 9618S on all correspondence.
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|       LEA        |
|     FORMAT       |
|   CONVENTIONS    |
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The following describes the format or markup conventions used in
creating
Leonardo Electronic Almanac. The function of these conventions is to
facilitate perusal through the text, and to make it easier to create
conversion programs to various text readers.

=====: Section Heading Delineation - 62-character sequence
*****: Item Delineation within Section - 62-character sequence

-----: Separator for subsections within items.
<  : Begin Item Title - search for the character "<" followed by two
spaces
  >: End Item Title - search for two spaces followed by ">"
|_ or _|: This sequence takes you to the next SECTION TITLE.
Item titles and author/contributor names appear exactly the same in
the Table
of Contents and at the location of the actual item.
Section names appear in all capital letters, and appear
with all letters in sequence with no spaces (PROFILES, REVIEWS,
etc.).

The preferred placement and format for address headers at the top of
each
item, preferably organized in the following way:

Contact Person
Organization
Street Address
City, State, Postal Code and Country
Tel:
Fax:
Email:
URL:

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  | WORLD WIDE WEB |
  |      AND       |
  |      FTP       |
  |     ACCESS     |
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The LEA archives, including the Leonardo Electronic Gallery, has
been moved over to the World Wide Web site, which is now accessible
using the following URL:

        http://www-mitpress.mit.edu/LEA/home.html

The following are the specifics about ftp access for Leonardo
Electronic Almanac:

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

Currently only back issues, submission guidelines and a limited
number of current files are available via ftp.. Check the README
file for the most current information about the contents in the
system.

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|       LEA           |
|   PUBLISHING &      |
|   SUBSCRIPTION      |
|   INFORMATION       |
|_____|
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Editorial Address:
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 718 6th Street SE
 Minneapolis, MN 55414-1318
 Tel: (612) 362-9390
 Fax: (612) 362-0097
 Email: harri067@maroon.tc.umn.edu

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< Ordering Information >

Leonardo Electronic Almanac is $15 to Leonardo/ISAST members  and to
subscribers to the journal Leonardo. The rate for Non-Leonardo
subscribers is $25.00

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Please include full mailing address or MIT Press account number,
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========= <  End of Leonardo Electronic Almanac 3(2)  >
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