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INTRODUCTION

< This issue >

Craig Harris

This issue provides a view into the world of media arts in Brazil. I was pleased to have had the opportunity to attend the VIII Sibgrapi (Brazilian Symposium on Computer Graphics and Image Processing) as a Guest Artist, an event that is establishing a media arts component. In addition to my report on this event, we are fortunate to be able to provide LEA readers with a window into some of the work represented. Tania Fraga has compiled an exhibition of her work for the LEA Gallery, and Nelson Mascarenhas has provided us with a pointer to an exhibition of the Brazilian artist Waldemar Cordeiro. Roy Ascott recently attended an event in Sao Paulo, Brazil, entitled "Art in the 21st Century: Humanisation of Technology". Roy plans to provide us with some insights into that event in the near future. And finally, congratulations to Eduardo Kac, who was the recipient of a 1995 Shearwater Holography Award for his 12-year development of Holopoetry. Eduardo's work is familiar to LEA readers, who can see his work in past issues of LEA, and in the LEA Gallery.

Steve Wilson provides us with the preface to his new book "World Wide Web Design Guide", and several book reviews appear in Leonardo Digital Reviews. Finally, LEA readers may be able to experience some of San Francisco's notorious Digital Be-In this year, as the organizers launch it into cyberspace for a live event on January 11, 1996. Check the announcement that doubles as a profile about this unique event for details. I have attended the Digital Be-In in San Francisco, and can safely say that it's a "happening". It should be interesting to find out how the event will transpose to the internet.

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FEATURE ARTICLE

< SIBGRAPI 1995 >

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My visit to Brazil in October was initiated by an invitation to participate in Sibgrapi 95, Brazil's 8th Annual Symposium on Computer Graphics and Image Processing. Artemis Moroni was working with her colleagues to establish a media arts component for the symposium, and had been asked to create an exhibition, and to invite some performances/presentations. The event was hosted this year at the Federal University of Sao Carlos, and was organized by Nelson Mascarenhas and Marcos Mucheroni (among others, of course). About 500 researchers from all over Brazil converge each year to share current work. This was a crucial year in establishing an art component in their annual program, reminiscent of the period when Siggraph was formulating its annual Siggraph Art Show. This year's art program was successful in its goal, and next year's Sibgrapi in Belo Horizonte will present an expanded art component, to include the art show, performances, and presentations.

The art exhibition showed two-dimensional and three-dimensional art work, and included several computers operating a virtual art gallery, and computer art works. Curator Artemis Moroni commented that this was the first show that she had worked on where there were more computers than work to show, indicating the level of support

that she had in assembling resources to launch the exhibition. Marcos Mucheroni created the virtual art gallery with a graceful implementation of a touch screen interface. Tania Fraga introduced a survey of her art work using a Netscape interface. Tania has provided LEA readers with a gallery exhibition and profile of her work. The article appears below, and the exhibition is available in the LEA Gallery. There was a diversity of work shown, and I found it striking how the artists incorporated their cultural background into the work. There was a strong Brazilian flavor in the work, something that I found refreshing.

Jonatas Manzolli presented a performance, consisting of dancers, pre-recorded music segments, and live-performed music controlled using a data glove. "Trilhos Sonoros da Ferrovia" is a work about the importance of trains in the culture of Brazil, and the cultural loss as the trains are shut down in favor of other modes of transportation. A large, pyramid-like structure on the stage created the foundation for hanging assembled materials from trains and train tracks. These were played by the dancers during the work, and the sound was amplified throughout the hall. The entire performance took place in the dark, except for the light emanating from fiber optic threads in the dancers' costumes. The costumes were created by Silvia Matos, who has been working with fiber optic art work for several years. This was her first implementation for live dance performance. The elegant movement of the lights created a fascinating balance with the sometimes harsh train sounds. The lights were turned on at the end of the performance, and the audience was invited to come onto the stage to play on the structure. I created one of my hybrid performance-presentations based on my Configurable Space simulations of future creative environments, and presented information about LEA and art on the internet.

The art show at Sibgrapi 95 was successful; it was received with interest and fascination. As the art component evolves in future years, it will undoubtedly have an affect on the development of Sibgrapi and on the research community. Artemis will inform us when the art show World Wide Web site becomes available.

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PROFILES

< Wanderings into the Creative Process of a Computer Artist >

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Introduction

The present essay reports the process of creating computerized simulations of virtual and interactive 3D objects, which can be seen in depth with stereoscopic devices. During the process, objects were created with which the user can interact. The user becomes a co-author of the work, being no longer in the passive position of an observer. Recently 3D objects were created as seeds of an endless work of art to proliferate on the WWW in the following electronic address: http://www.lsi.usp.br/~tania/p3.html

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The results of this process are shown in several ways, such as:

1. CD-ROM, considered a suitable media since it provides non-linear reading;

2. HOMEPAGES at WWW in INTERNET located at the electronic address: http://www.lsi.usp.br/~tania/tania.html;

3. and I have studied simultaneously different kinds of supports to show the result of the work in conferences and exhibitions. These supports are such as: videos or books; 3D installations with prisms, mirrors or lens stereoscopes; or the set up of slide projections, using polarizing filters and glasses.

Most of the simulations created have the property of being interactive either to myself or to anyone who will manipulate it. While being presented to the user, through stereoscopic instruments, the simulations lead the user into the 3D space of the object. Therefore I describe these simulations as perceptive phenomena, expressed in a visual repertoire, which constructs experimental fields for imaginative activities.

I consider the development of creative strategies for the computerized world as being an important task for the contemporary artists. Penetrating into the artist's work is a new way of communicating and exchanging ideas, learning and creating. The user turns from observer into co-creator of the 3D objects. Being dynamic entities in constant change, these 3D objects require from the observer an intense perceptive activity.

Wanderings

The stereoscopic simulations of 3D objects enable people to have a sensorial experience of the tridimensionality, transforming the "virtual visible" into a "visible for us." (1)

The creative process of producing 3D objects that I experienced has been the result of probabilistic and random concatenations of visual ideas. I call them probabilistic concatenations because they have resulted either from logic choices or from their subjection to laws regulating human perception. The random concatenations result of choices I have made and derived from the association of ideas that emerged in my mind by insight. I understand insight as the ability of detecting connections that are not conspicuous in any other previous premise. Such connections appear as sensations or as intelligible ideas.

I understand the perception of the tridimensional space as intelligent constructs that result from the aggregation of several factors. Among them we have the inherited factors added to the knowledge learned during the individual's contact with the environment, as well as unconscious factors. In human beings, these intelligent constructs are constantly re-elaborated by the imagination.

Observing my own process of creating the 3D objects, I perceived that the abstract thought was organized in a synchronistic way. I have constantly analyzed the non-causal connections that emerged by insight and have transformed them into action. The results originated in this process enabled me to become aware of the synchronistic events that occurred and allowed the exponential development of 3D objects. Subsequently I transformed again these objects creating families. The objects' conception has combined the precise and disciplined thought with the free and undisciplined

emotion, sometimes expressed through the exuberant use of shapes and colors.

The tridimensional reasoning has resulted from the assemblage of sensorial, affectionate, logic, and intuitive qualities. It has congregated and articulated such qualities through the action of creating sensitive realities which I have named fields of events. I can not consider such fields of events as painting, sculpture, installation or performance. I think it is necessary to elaborate other categories. That's why I call them interactive stereoscopic simulations.

Picasso said he found the shapes, with which he worked, without having to search for them. In a similar way, when I foresee the shapes I may explore, I try to reveal them and to surpass what I already know. However, while working with computer tools, I have come across an almost incommensurable universe of probable shapes. For this reason I have felt the need to define limits to guide my creative strategies. These limits are selected, dissolved, and expanded, but are always restored. Being flexible limits, as vectors, they orient the creative action in a complex system of choices and decisions. The experimental process, however, happens always within the possibilities offered by the hardware and the software.

According to this contingency I have established some premises to guide my own action and used them to produce the simulations. Formerly, I have worked with them to delimit a group of ideas and procedures that would make the production possible. It was an attempt to orient the creative action and to maintain the coherence along the process.

The choice of such premises arose from an empathy to the ideas of some thinkers, artists and scientists. The premises have been initially just outlined. They have been improved, re-elaborated and transformed through successive approximations during the creative process. The main purpose of the work has been accomplished, being it: to enable the public to immerse partially into the created objects and interact with them. The user becomes a co-author of the work, being no longer in the passive position of an observer. Recently I have created the 3D objects as seeds of an endless work of art to proliferate at the WWW. (2)

The selected premises are the following:

1. the opposition between the conceptual simplicity of the shapes and the visual complexity of the final results;

2. the contrast between the physicality of the 3D objects and the immateriality of their simulations;

3. the contrast between the shadowed and the lightened areas of the 3D objects;

4. the fact that there is no established system for the visual reading of the shapes;

5. the amplification and the invention of visual repertoires as "prima materia" for the imagination;

6. the experimentation with shapes and colors as fields for exploring the possibilities offered by the computer technology (I consider the computer to be not only a working tool but also an instrument for cognitive amplification.);

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7. the acceptance of subjective choices and the search for a balance between subjectivity and objectivity along the process;

8. and the elaboration of experimental fields which are favorable for recovering sensations while exploring new realities, opening new perspectives and expressive frontiers.

I have selected, simultaneously with these premises, different methods to design the 3D objects such as: sets of basic 3D shapes; sets of principles for producing some topological surfaces; and sets of numerical series. I used each of these sets in my design procedures since they offered me some guiding elements.

The basic shapes used were the torus, the cones, the prisms, the cylinders and surfaces formed by NURBS (non rational B-splines).

The principles for generating the topological surfaces were the following:

1. the beauty that resulted from the simple periodic movement of a straight line in the interior of a cylinder as in the Plucker surface;

2. the exponential variation using harmonic relations to design 3D assembled rings;

3. the fact that there is only one side in topologic objects called: "Cross-Cap", "Moebius Strip", "Esker conoid", among others;

4. and the complexity and richness achieved from small variations of the objects in the "Koch" curve.

I used also numerical series to modify the 3D objects, originating others totally different. Such objects, however, maintain among themselves an impression of unity that can be found in their common mathematical relations and not necessarily in their final appearance.

The conceptual premises along with the selected composition methods have provided the elaboration of the visual repertoire shown in the electronic address: http://www.lsi.usp.br/~tania/tania.html.

The speed of the high performance computer systems has enabled me to learn, to amplify and to refine my repertoire. The whole process is what I call the adventure of experimenting with sensations, ideas and images.

I would describe this repertoire, which assembles several categories in its conception as well as in its results, as rational, sensitive, affectionate, intuitive and transcendent. Rational, because the 3D objects' elaboration was consciously controlled by the logical and analogical reasoning. Sensitive, because these objects evoke sensations. Affectionate, because the produced sensation induces judgment. Intuitive because synchronistic and non-causal associations were used during the objects' conception. Finally transcendent because the repertoire tries to lead the user to experience sensations related to abstract concepts such as peace, harmony, unity and freedom.

I consider the concept of harmony as being much more than only a set of mathematical relations that cause pleasant sensations. Harmony results from the tension that exists among different situations in the phenomenal world. It is the organizing principle of energies,

which transforms everything and pushes life forwards, “for what stops changing and being transformed decays and dies.” (3) Harmony is also the set of all different relations that provide the articulation of different states. It organizes the perceived fragments into a totality in permanent transformation. It is the expression of dynamic patterns that form unstable “webs,” which delimit the bounding area between order and chaos.

I have felt that people tend to believe that the geometric shapes are cold and express only ideal and perfect realities, very distant from the human imperfection. The set of works with torus [Figure 1: To see the deepness of the 3D object try to coverge your eyes until you see 3 images.] [Editor’s Note: the figures refered to in this article can be viewed in the LEA Gallery] and NURBS try to modify such belief. The torus and the NURBS are twisted, intercepted and connected with other geometric shapes, showing sensual possibilities, sometimes even provocative. Some of them have a strong tactile appeal, asking to be touched [Figure 2]; instead they can only exist in the immaterial space, without gravity, where they float.

The 3D objects delimit virtual environments, mixing inner and outer space. The negative space often catalyses their visual strength, providing the configuration of torn ethereal floating structures [Figure 3].

In many objects, the inside and the outside can be perceived as a continuum, which we enter in one side and emerge on the other side [Figure 4].

Such 3D objects try to inspire the sensation of unity which is latent even in the fragmented and discreet multiplicity. The continuity is found in the order subjacent to the composition.

Certain puzzled shapes when seen with stereoscopes become clear and defined. Their apparently interlaced rings dance in the space, touching themselves several times but only in a few places. The vitality of some 3D objects has been found in the tension between the delicate shape of the floating rings, and the chaotic and aggressive strength of their concentration [Figure 5].

Other objects have rings that rotate around their center while going through their trajectory, building new structures that remind us of the crystal nets structures.

Some objects show harmonic variations eliciting sensations of serenity and peace, while others transmit instability. They are like waving solidified surfaces, which capture the fragility of a moment [Figure 6].

I showed here only few examples of my work. They are some of the almost uncountable possible results obtained through the manipulation of “script” files which have originated the 3D objects and can still originate more.

The 3D objects I create are intangible illusions that occur in the mind when it is confronted with some perceptive phenomena. Such phenomena provide the users with the illusion of other realities and allow their immersive experience.

When we apprehend the illusory phenomena we become astonished by their magic. A magic that results from the fact that such phenomena do not correspond to our usual experience of mechanical and gravitational laws in the physical world.

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The fact is that, although the 3D objects provide sensorial experiences, they could never exist materially. Such existence is impossible for most of them, since they consist of elements that could never be submitted to gravity's attraction without losing their shape. Our cognitive system recognizes the impossibility of their material existence, but it perceives them as shapes delimiting spaces.

The 3D objects apparently transgress the laws of Physics. The uncommon experience they produce either disturbs or delights us. The experience suspends for a moment the disbelief, and arouses our curiosity with its unattainable existence. Although we have a visual pleasure we feel also frustrated for not being able to materialize the 3D objects.

These 3D objects, when transformed into prints or photos, lose their enchantment and become just documented fragments of realities that have been conceived to exist as virtual simulations.

I conceive the 3D objects as visual poetry. They are objects that allow us to explore frontiers where exchanges may permeate and where logic and analogic thought complement each other. All this together permits us to become aware of the act of perceiving, of thinking, of feeling and of creating while they are being processed. The process of creating 3D objects offers uncounted possibilities of exploring new sensations and of amplifying the sensitivity of those who interact with them. They work as "laboratory exercises" for the created signs, recombining and testing them.

During my creative process I work with numerical data, with functions, with relations and with logical operations. I have conceived and produced flexible patterns of realities and my "prima materia" is abstract. Numbers and principles based on simplified interpretations of physical laws permit the production of the 3D objects as conceptual models that change and evolve. This transformation occurs as these models become adjusted to the results of the learning process. Such facts characterize the 3D objects as being mutable and interactive for the artist and the users.

The users' participation in the artists' work has been a goal for the most of the arts movements of this century. However, turning the user into a co-creator, into someone who shares intensively the pleasure and the responsibility of creating, of making decisions and of choosing, is a communication attitude that may be intensified. We have also a "place" to experiment with space and time, chaos and order.

Inside these pre-defined fields of events, the users can share new sets of significant relations. They can also have the opportunity to increase their visual repertoire, to develop and to organize their logical and analogical reasoning as well as to practice their creativity and to refine their sensibility. They can even enlarge the potential of their multiple intelligences amplifying their consciousness of signs.

The experience sensed directly through the simulations is curiously a conceptual one which is objectified in a visible and touchable entity. It may seem paradoxical to speak of direct experiences, when such experiences are intermediated by computer languages, languages which organize them mathematically and enable us to live the magic moment of apprehending a visual quality.

Immersing in the virtual illusory space is like oscillating in a

flexible and multiple universe. In such a universe we become aware of several sensitive facts; we organize our perceptive efforts in different spaces and time; and we apprehend as well as transform our discontinuous sensations in different realities.

Our conception of reality is strongly amplified. Reality is not only what materially exists around us, but also everything that we are able to perceive either consciously or unconsciously.

The development of a new technology, however, is not enough to provide a new expressive way of creating repertoires. If we refer to our history we will verify that the technologies of production have usually characterized the civilizations and determined the aesthetics of each period.

I used, in the present essay, Peirce's conception of aesthetics. The Brazilian semanticist Lucia Santaella affirms that Peirce considers aesthetics as the act of feeling; the comprehension through the senses; the sensitive knowledge able to contribute to the "human growth". Aesthetics determines what "should be considered as the highest ideal..., the goals..., the dreams..., the plans..., that conduct our steps." Aesthetics is responsible for "the impossible discovery of the highest ideal, 'summum bonum' of human life, (...) the utmost force of attraction for humankind without any other reason, (...) something to be experimented by itself, in its own value." (4)

The "action of the sign" is the connector that links everything in the universe: stars, galaxies, human beings, animals, planets, minerals, as well as art, science and culture. In Peirce's view this action is mediated by an ideal, a purpose or a goal. In the present work the goal is to communicate with people guiding them towards the creation of interactive stereoscopic simulations.

Our capability of devising shapes is based on the learning and on the knowledge acquired through experience with pre-existent technologies. It is by experimenting that we find possibilities of generating shapes and of refining our sensitivity. Therefore, through the constant re-elaboration of shapes and concepts, our repertoire of signs is improved.

Artists are the ones who explore, discover and unveil unfathomable possibilities and are not certain of anything. They simply pursue to assemble signs, to create new meanings, to awake sensitivities, to arouse curiosities and to stimulate actions for themselves and for others.

Artists reveal universes of possibilities, inspiring feelings through the act of admiring. The artists' work may lead our consciousness towards a state of emptied mind, except for the pure sensation of a quality it produces. It attenuates the boundaries between the quality shown and the reaction that it produces in someone's mind. (5)

Sensation is here considered as being the basic requirement for the apprehension of quality. Quality is something that presents itself in the mind, instantaneously, in the exact moment that this mind becomes aware of its manifestation and of the effect that it produces.

The new approach for artistic activity is now in the exploration of illusory realities. We may conceive, experiment, observe and transform imagined simulations, which by their own nature allows the manipulation and intervention.

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The alternatives shown here are only a few among several possible ones, and the attitude required to explore such options is the main conception of contemporary art.

Experimenting with interactive stereoscopic simulations reveals possibilities that have not yet been explored. This is not only happening in the art field, but also in most different areas of human knowledge. In the imagination's world there are infinite combinations of shapes to be disclosed. In the artistic field new frontiers are revealed for the adventurous minds, inciting them to experiment with new combinations, to detect new morphologies and to elaborate new repertoires. The human's "action of the sign" is our vocation for comprehension and it advances through the frontiers of the unknown towards knowledge.

Notes:

1. M. Merleau-Ponty, in [MERL75] , pg. 282 and 294;
2. Look at homepage p3.html at the electronic address: http://www.lsi.usp.br/~tania/p3.html;
3. Mircea Eliade in [ELIA91] , pg. 79;
4. Lucia Santaella in [SANT94] , pg. 11, 109, 119, 126 and 130;
5. Lucia Santaella in [SANT94] , pg. 139.

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Doctor in Communication and Semiotics
Doctorate thesis: "Interactive Stereoscopic Simulations"
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Recent Publications:
Fraga, Tania. (1994) "Simulagues Estereoscspicas: Interatividade e Imersco" in Anais do Segundo Simpssio de Computagco Grafica em Arquitetura, Engenharia e Areas Afins. Salvador: UFBA, 1994, pg. 81-86.

Fraga, Tania. (1994) "Interactive Stereoscopic Simulations" in Conference Proceedings of First Symposium Multimedia for Architecture and Urban Design. Sco Paulo: FAUUSP, abril 1994, pg. 81-87.

Fraga da Silva, Tania & Taunay, Maria Luiza. (1992) "The Phenomenon of Computer Art and the Possibilities of a New Aesthetic" in Conference Proceedings of Sixth National Conference on Liberal Arts and the Education of Artists. New York: New York School of Visual Arts, October 1992, pg. 278/291.

Areas of Special Interest, Knowledge and Skills:
The convergence of art, sciences and communication using networked hypermedia, developing interactive stereoscopic simulations using the proper computer environment as the support of her work.

The 3D Objects have been created with HPs, SUNs, SGIs Workstations and PCs. Formerly the software used was the solid processing software PROGRAF, from "TARG Technology Ltd." and afterwards the software TOPAS, TEMPRA, PHOTOSTYLER and 3D Studio, among others. The sets of stereo pairs were created using the public domain software RAYSHADE, from the University of Utah (USA). The interactive objects were created using the Silicon Graphics' script language YODL with the POWERFLIP interface. The hypertext interfaces (Homepages at WWW) have been written using HTML language and the browser Netscape and

the multimedia interfaces (CD-ROM) have been written using the software TOOLBOOK.

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< Arteonica - Computer Art Work of Waldemar Cordeiro >

Nelson Mascarenhas
Email: nelsonm@power.ufscar.br
URL: http://www.impa.br/visgraf/Gallery/waldemar/waldemar.html
http://iris.ufscar.br:8000/sibgrapi95.html

"Arteonica" shows the computer art work of Waldemar Cordeiro, created between 1969 and 1973. Cordeiro was a pioneer of art using computers in Brazil, and was one of the first Brazilian artists to do serious research in exploring art and computers. He participated in the famous "Cybernetic Serendipity" exhibition, realized in London in 1968.

This exhibition was originally presented at the VI Sibgrapi (Brazilian Symposium on Computer Graphics and Image Processing) in Recife, September 1993. It was organized by Nelson Mascarenhas, Luiz Velho and Lilia Hess.

[Editor's Note: "Arteonica" includes several images and a "gallery" tour, as well as texts describing the works presented. The texts are primarily in Portuguese.]

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PUBLICATIONS

< "World Wide Web Design Guide", by Stephen Wilson >

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World Wide Web Design Guide
Hayden Books, 1995, $40.00
Ordering Information:
Telephone # for ordering the book is 800-716-0044
Web site for ordering:
http://www.hayden.com/bookstore/orderinfo.html

Excerpts:

Design is a funny word. In its narrowest sense, the term is often used to mean visual composition of 2-D images and 3-D objects. However, during the last 50 years an expanded view of design has emerged, represented by theorists such as Buckminster Fuller. Design can be seen as a process of integrating information from diverse fields. The goal is to create cohesive systems; visual appearance is only one factor. Web designers who restrict their efforts only to how their Web pages look will find that they have tapped only a small part of the Web's potential.

Therefore, this book will help you to consider a wider set of expanded design issues beyond visual and media composition. It will provide background material and tools necessary to be an innovator in a rapidly changing environment. Let's look at some of these issues....

Computers, the Internet and the World Wide Web are all examples of technological systems that provide great challenges and opportunities. Some readers may want to "black box" these tools - in other words, they're willing to deal with the technology as a

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mysterious black box whose inner workings are unimportant, as if to say, "Just tell me what I need to put in and what I get out."

My experience of teaching digital artists over the last 16 years has convinced me that this approach is not the most productive. Artists and designers who are going to be creative innovators with technological systems must know as much as they can about the underlying assumptions, history, and functional structures of the systems they work with. Web designers need to immerse themselves in these emerging technologies, play with their capabilities, and let the possibilities stimulate the imagination....

Questions To Ask Yourself as a Web Designer

To respond adequately to the challenge of the Web, you can use concepts of expanded design. As you design your site, ask yourself about the larger context of your site, its information structure, effectiveness of interactivity, and visual communication. Here are some starting questions:

Surrounding Context: What is the site's definition of significant information? Why is the site being created? Who do you think will be interested? What other sites cover related material? Does the international context of the Web have any special influence on this site? Without the Web, where would anyone go to find similar information?

Information Structure: What categories of choices are offered? What conceptual frameworks seem to underlay those categories? How will you structure the information? How will you make that structure clear to Web visitors?

Interactivity: How is interaction orchestrated? What hotlinks are there? How are navigational options made clear? What would be typical navigational scenarios?

Visual Impact: On first view, what will be most noticeable about the site? What will engage visitors? How does the site's presentation work visually? How does its composition influence its effectiveness and appeal? What will visitors find new or surprising about your site?....

The World Wide Web allows any individual, group, or organization anywhere in the world who has something they think will be of interest or value to others to make it widely available to an international audience. The information provided can in some ways achieve as much exposure as that from large institutions. This new expansion of publishing is an unprecedented development. Just as the spread of reading and writing extended communication possibilities to everyday people, the increasing ability to publish on the Web can be considered another major event in the history of literacy.

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LEONARDO DIGITAL REVIEWS
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< Book Review: "Kinetics", by V. F. Koleichuk >

"Kinetics"
by V. F. Koleichuk
Galart, Moscow, Russia
1994. 160 pp.

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In recent years the Galart publishing house has become very popular in Russia thanks to the series of albums it publishes under the general title "Twentieth Century. New Art." The main part of the albums is devoted to artistic trends which were once called "underground" in Soviet Union. The book "Kinetics" was published as a part of this series late in 1994, this publication being the first serious treatment of kinetics in Russian. The introductory text was written by one of the leading kineticists of USSR (now Russia), Vyatcheslav Koleichuk who was also author of the book composition.

The first chapter of the book is devoted to sources of kinetics and its historical predecessors. It begins with following postulate by the author: "Kinetic art, kinetics is a kind of creative work based on the idea of moving form, meaning not only mere physical displacement of the object, but its change, transformation of any kind, the life of the object at the moment the spectator contemplates it."

This formulation is too broad so the author is forced to indicate as sources of kinetics extremely heterogeneous artistic trends and pieces: popular moving toys, kaleidoscopes, architectural and sculptural compositions by V. Tatlin, A. Rodchenko, N. Gabo, G. Kruti-kova and also light-musical experiments of A. N. Scriabin, V. Baranoff-Rossine, and G. Gidoni of early in the twentieth century. He even includes here experiments in the electronic music field carried out by L. Theremin.

Koleichuk also includes experiments with abstract cinema in kinescope surveying foreign works. However, such an approach is peculiar to specialists from other countries too (F. Popper, D. Konechny and others). That is why the only thing we can do is to state the existence of such vagueness of the definitions of kinetics as a general problem of modern art theory.

The pathos of the next section "Kinetics as a trend of modern art" is expressed by the following large-scale subtitle: "We can speak about kinetics' relatively integral trend, which manifested itself with specialized exhibitions, manifestoes, texts, interesting projects, beginning from the 50's." A short survey of experiments by J. Tingeli, N. Scheffer, F. Malina and other artists from different countries is provided here along with detailed enumeration of the first specialized exhibitions of kinetic art. The author shows us how the first shoots of Soviet kinetics began to come up. In the author's opinion the following trends are common for Soviet and

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world kinetics: the sophistication of technical aids along with kinetic art "techniques" dissolving in design and cinematography in feature films, etc.

Koleichuk declares from the very beginning of the third section "Language of kinetics" that "One meets with the complicated nature of analysis of kinetic creations upon first acquaintance with the works themselves." He indicates the "unlimited diversity" of technical aids used to create kinetic objects and therefore the "diversity" of movement forms (not only actual, but also the illusory) realized thanks to these aids. All this hampers the classifying of forms. Nevertheless, V. Koleichuk tries to reveal peculiarities in the use of such aids as mirrors, modules, programming and automatic control techniques and such in construction of kinetic objects creating specific visual effects of specific kinetic style being combined in different ways.

The fourth section is entitled "Idea of synthesis in kinetics: light, sound, movement." Its essence is also revealed by the large subtitle: "Kinetics is from its very birth the art field to which the connection with non-traditional kinds of art is essential and which needs dramatic ways of impacting spectators by combining methods of many (different) kinds of art." The author demonstrates, using concrete examples of how fundamentally kinetic objects fit to elements of traditional art (mobiles in architecture, "cybersculptures" in landscapes), and to any audio impacts such as noise or music. The most acute and complicated problem is of audio-visual synthesis in light-music. V. Koleichuk believes light-music to be a type of kinetic art. I am of the opinion that the statement is disputable; the fact that movement is inherent to kinetics is not enough to describe its essence. One could just as well refer to dance and cinematography as kinetic art.

I believe light-music to be a new and separate kind of art. I also believe that one may only refer with some reservation, to automatic (psychedelic) light-music devices operating in non-stop mode designated to make the environment more "live" and beautiful as examples of kinetic work. The analytical survey is completed by one more declaration printed in capitals: "Mastering the kinetic form has positive influence on creative practice of modern art." V. Koleichuk believes kinetics to be a catalyst for new ideas because it not only concentrates our attention on new technical aids but also motivates artists to reevaluate the roles of traditional materials and techniques and their possibilities.

The books second part is devoted to a detailed survey of leading art groups of USSR, some still active, which were engaged in kinetics. The survey is accompanied by rich illustrative material. First of all the author tells about "Dvizhenye" (Movement) group which split into several separate teams: "Mir" (World), "Argo" and so on. There is a special section devoted to each of the teams in the book. Besides this, special sections are devoted to works by kineticists from Baltic countries (Riga, Latvia) and "Prometheus" studio (Kazan, Tatarstan). There is lot of information on all these groups in the special issue of "Leonardo" (Volume 27, Number 5) thats why we can finish here our review. The total quantity of illustrations in the book is 135, most of them in color. I think the book by Koleichuk and the above mentioned special issue of "Leonardo" when taken together provide a full idea of the history of

kinetics in the USSR.

“Kinetics” was presented for the first time to the wide audience at the opening ceremony of kinetic art “Whirling and Twirling” exhibition held in Moscow in December 1994 (1). After presenting the exhibition and the book to the visitors V. Koleichuk said in conclusion: “So one can state - kinetics is dead! Let us go on to the water treatment!” This statement was the additional corroboration of the optimism of former Soviet vanguard representatives.

Reference
1. For a review of this conference see the Reviews section, Leonardo,
Vol. 29, No. 2, 1995.

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< Book Review: “Hidden Order” by John H Holland >

“Hidden Order: How adaptation builds complexity”
John H Holland
Helix Books, Addison Wesley
ISBN 0-201-40793-0
1995; $24.00 US

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This book is about how complex adaptive systems (economies, cities, diseases, ecologies, civilisations, the nervous system) emerge, survive, evolve. With remarkable clarity Holland outlines a research agenda that began over the last twenty years and will become one of the main new sciences of the next to the invention of genetic algorithms, and his own road map (a class of models called “echo” models) of the fundamental principles that he thinks will underpin successful theories of complex adaptive systems. Upon re-reading, the word clarity summarizes best Hollands achievement in this book. He clearly defines the problem set as he sees it, clearly identifying the underlying principles, and succinctly describes the necessary interaction between observed phenomena in diverse domains, the models and simulations, and the resulting rigorous mathematically-based theories. Like the Lectures on Physics of Richard Feynman this book and Hollands work will have wide influence.

In his closing chapter Holland states boldly his beliefs about the broad requirements of a successful approach to theory of complex adaptive systems. Each one of these are rich areas for discussion in themselves:

1. Interdisciplinarity: the theory must apply to very different domains - from biology, medicine and ecology to sociology, anthropology and history. A good theory of complexity must apply equally well to the emergence of AIDS and the fall of Central American civilizations, as well as the evolution of the Internet.

2. Computer-based thought experiments: Computer-based models allow complex explorations not possible with real systems. These can guide theoretical thinking, but Holland is insistent that computer models that happen to match certain characteristics of real systems should not be mistaken for a deeper understanding of underlying principles and predictive theoretical constructs.

3. A correspondence principle: Holland insists that a successful theory of complex adaptive systems must encompass standard models

from prior theories (just as Bohr's famous correspondence principle required consistence between quantum theory and classical physics). Thus a successful theory of complex adaptive systems must map cleanly to well established theories of microeconomics or virology.

4. A mathematics of competitive processes based on recombination, Holland insists on the need for rigorous mathematical generalizations that will define the trajectory of the evolution of a system based on the interaction of competition and recombination- something that computer based experiments cannot provide on their own.

Holland's book is almost breathless with the excitement and optimism of the founder of a new scientific discipline. It speaks with joy about the way that the scientific method is being enlarged to deal with phenomena previously thought to be resistant to scientific inquiry. Just as our concept of science was enlarged with the advent of quantum theory at the turn of this century, so the theory of complex adaptive systems promises to redefine the scientific landscape of the next century. I highly recommend this book, particularly to artists and others developing interactive art works. If Holland is right, there is no reason that a good theory of complex adaptive systems should not also apply to the creation of the interactive art systems of the future.

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< Book Review: "Networking: Thinking About Mail Art", by Chuck Welch >

Networking: Thinking About Mail Art,
With and Without Technology
Chuck Welch
University of Calgary Press,
Alberta, Canada,
1995. 304 pp., illus.,
$ 39.95. ISBN: 1-895176-27-1.

Reviewed by Mit Mitropoulos
11 Elpidos Street
Athens 10434, Greece

Postage rates have greatly increased. So complains a Pasadena writer in this book of coffee table dimensions and predicts a high tech shift for mail artists in the 1990's. However, mail art is about operating on the global scale. It is also about having global concerns -- this doesn't have to be, but the book says so and I agree. Then a check on the list of coordinates of the authors (p. 250) confirms that they give longitude and latitude (and related economies) different to those of the Los Angeles area (and of another 23 North American contributors). Namely: Liege, Viareggio, London, Oslo, Modene, Trogen, Frankfurt, Montevideo, Elblag, La Plata, Stockholm, Eysk, Accra, Wellen, Nishinomiya and Athens, where we still have a problem getting the phone lines to work, no matter what the sophisticated end - equipment is -- not to mention the sizable majority of this planet's population who have never in their lives made one single phone call and never will.

The Pasadena writer offers us (p. 129) the title "The Future of Mail Art". One other (p. 171) relates mail art to Telecommunications art, but wisely enough doesn't substitute the latter for the former. A third author, a mail artist herself, makes you wonder: in a mail art network, she (alone amongst the authors) refuses to give her mail address (or other means of contact -- p. 251). In her paper (p. 219) we do get a useful, if partial, indirect and incomplete explanation: the way I would put it in understandable telecommunications terms,

is that she does perceive that our access is her privacy and the more we have of the one, the less she gets of the other. And the question is: What is the future of mail art in the Internet era?

If pressed to be brief, I'll say that the book gives two ways to go, Tourism and Internet itself. These two directions may not be desirable to us all, but it is interesting for all of us because mail art is networking over the distance. And both these directions do eliminate distance. Tourism does it, as a couple, co-authors (p. 147) put it by proposing to us "the next step for mail artists to take, which is into actually meeting face to face". They in fact put it to practice, take to the road and give us an account (I should mention at this point, for anyone interested, that one other couple, from Europe this time, Angela Pahler and Peter Kustermann, did an oversize diary-book on their colorful Tourism (details on p. 284)).

On the other hand, high tech connections do afford us instant live exchange not tied to geography. Movement (Tourism) and communication (see Internet or other means of telecommunication) have, of course, been man's basic activities. And both have played a central role in research for organization of space during the last 25 years -- as for instance in Space Networks, where we have been considering space itself as a network rather than as a place. But isn't distance an integral part of mail art? Isn't connecting under the closed door or over the wide ocean what it is all about? Open the door and cross the water to do exactly what? And we get no satisfactory answer here. Mail art is about networking, but networking live -- and no time to reflect -- to do exactly what? Again we are left wanting.

One view from the on-line culture area is to be found tucked in the Networker Databank Appendix, Entry 91 (p. 285): "Although I miss sending and receiving visual, tactile mail art, I believe on-line environments and networks will be a more pervasive and lasting medium, particularly for artists who work with words, ideas and information and who are interested in working together to broaden the art base". But the communications issues that come up aren't as simple as that. And here the authors who vote for technology (even those who want to have us pack our bags without mention of portable communications gear to add) fail us. Yes, networking is about access. Therefore (and the lady with no address got it right), it is also about privacy: who wants to be with all of the people all of the time? This is the beauty and the purpose of behavioral space articulated for the activities of movement and communication, whether it is built space or electronic space. This a control issue. And certainly the knowledge of this planetary connection is both exhilarating and necessary for problem-solving tasks. But what is the complexity of the interactivity taking place in the art networks, whether in snail mail or (even more so) in electronic mail? The book is made up of 6 parts, one of which is New Directions, itself made up of 9 chapters. Five of the chapters go for going on-line: "the networks have arrived just in time". Myself (having lived in networks for long, and having survived because of them) I wish it was true. Not so. The last time I know that there was a global policy context to run the planetary networks through, was at the end of the 1970's to the very early 1980's. In 1979, the UNESCO MacBride international commission report on the New World Information and Communication Order was handed in.

Today, the social context for innovation is the marketplace. For financial stability, we now are left to depend on the bank holiday (if it is October) in Japan for the pressure to ease on the currencies gone global. And we have to pay for a PC, when an NC would do -- four times cheaper the network computer, itself lacking intelligence draws its computing power from links over a

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telecommunications network. Of course there are other ways to approach the book and enjoy it. But exactly because I believe mail art to be both an exciting cultural activity accessible to a wide range of people and that networking is indeed necessary, the future of mail art remains a concern. And although we are not being thoroughly introduced into the future possibilities, we are given a really good idea about the past of mail art, both anecdotal and critical. Furthermore, the editor provides us with a variety of ways we can choose to join into this participatory art form. A set of six Appendices (60 pages in all) see to that whether you are a newcomer or an old boy, whether with or without technology: Archives, magazines, articles, recordings, books, a 24 year selection of mail art activity, an ongoing networker databank. Unfortunately, no discipline has been exercised so as to have descriptive-only titles and subtitles that would be index-assisting to the reader and retrieval-possible. You must also be prepared for an index that is a good who-is-who, but includes no issues or concepts (Is anyone arguing on network content? I cannot tell you. Is there any mention of privacy? You may find it by chance on page 171. Is performance a valid direction? Yes it is, but you have to read the book and check the illustrations before you reach that conclusion. Anyone interested on Internet? Of course. You have six references in the index. But tourism is not included).

There are approximately 125 illustrations, out of which more than half are Mail art exchange artworks. They do, however, give us little sense of the interactivity involved (it is like having answers without having the questions -- it is a rare case that in Figure 99 we do know what is being exchanged). And only Figure 98 gives us (in the background of a midshot) a sample of the wide range of responses a mail art call gets. But I am sure the book will win you over to have you add your own world map on the inside cover -- necessary for the planetary dimension and any indexing you may choose to make.

In fact this publication should also receive attention outside the mail art community, for those members it will fill a vacuum indeed. Artists involved in the electronic arts, for instance, should note that unlike them, all mail artists are networkers. What is more, all mail art processes are interactive, at least the potential is there for those involved in the exchange to use it -- if they are good enough. Not so with Art-Technology, where response systems are on the increase: machines programmed to be triggered off by humans -- whether by moving through space or by making decisions or more likely random choices. In mail art activity, my definition of how it feels to be in a network fits well: You can alternatively become center or periphery. You may plug into the system's resources, pass information to all, survive. Or you may fade out, escape, survive. The editor does give out this feeling, in his anthology that took him five years to complete.

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< Reviewer's Bio: Richard Land >

Trained in applied physics, with professional work in theatre and other art forms, Dick Land has focused particularly on the areas of color and vision. Starting in the 1950s, he created mechanical systems for using light to create images, which led to his development of the "Land Chromara," a lumia instrument. This work was reported in the earliest issues of Leonardo. Land's interest in vision, in particular, brought him an invitation to join the Ivan Sutherland group at Harvard in the late 1960s, when various innovations in computer graphics were being developed. Among many of Land's perception demonstrations was the first real-time, 3D, full-color drawing system, although its capacity was substantially

limited by the capacity of the PDP-1. This work also was reported in the pages of Leonardo.

Land's computer graphic images were exhibited world wide, and reports on his work were published in many countries into the early 1970s. He remains active with the U.S. Institute for Technologies, having introduced computer-graphic theatrical production techniques into the field before most venues had access to facilities or computers with enough speed and capacity to be useful or economical. Land continues to work as a consultant and lecturer in applied physics, with particular emphasis on vision, and to a lesser extent to work as an artist.

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< END LEONARDO DIGITAL REVIEWS DECEMBER 1995 >
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ANNOUNCEMENTS

Eighth Annual Digital Be-In - Multimedia Concert and Exhibition Moves Into Cyberspace

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Verbum is pleased to announce the latest version of the evolving Digital Be-In, a concert and exhibition on the cutting edge of new media focused on humanistic applications of digital technology and the aesthetics of the future. Taking place from 7 p.m.-2 a.m. on January 11, 1996 at the Transmission Theater, 314 11th Street in San Francisco, this event will meld the technology of the 1990s with the evolutionary spirit of the 1960s.

LAUNCH OF THE CYBERSPACE BE-IN

This year, the Be-In moves into cyberspace with the launch of an internet site, <www.be-in.com>, and a live "netcast" of the January 11 event. Executive Producer Michael Gosney expects that this year's Be-In "will continue the tradition of thought-provoking content and great entertainment - with the added dimension of a pioneering internet program that will bring remote groups into interaction with the San Francisco event, and also broadcast the whole event to a worldwide audience."

MUSIC, MINDS AND BLENDO

Show highlights include musical performances by The Venusians, Haunted by Waters, tantric dancer Daniella Haskara, and the usual expected surprise appearances; readings by leading San Francisco poets Neeli Cherkovski, Jack Foley, Nelli Wong and Jack Hirschman; appearances by Timothy Leary, John Barlow, Paolo Soleri, R.U. Sirius, Electronic Frontier Foundation Counsel Mike Godwin and many others. The musical performances will be enhanced with the Be-In's popular "blendo" visual accompaniment by several leading digital artists.

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THE DIGITAL FRONTIER: OPEN SCREENS, VR, FINE ART, GLOBAL NETS
In addition to the performances, the Be-In will again feature the popular Digital Frontier, where pioneering digital media applications are showcased, with an emphasis on aesthetics and thoughtful content. This year, the Frontier incorporates a special edition of Gulture Enterprises' monthly "Open Screens" forum of film, video, computer and animation works. Other highlights include "VR the World," a collection of cutting edge virtual reality exhibits organized by CyberEdge Journal, "The Art-ROM Room" selection of limited edition fine art multimedia works on CD-ROM collected by Beverly Reiser and Lucia Grossberger; an interactive exhibit by IGC Networks, who manage Womens Net, PeaceNet, EcoNet, ConflictNet and LaborNet; the first national gathering and show from the Art & Technology Society; and a Digital Art Exhibit of 2D works by Bert Monroy, a retrospective of editorial art from MONDO 2000 magazine, and the winners of the Micro Publishing News digital illustration competition.

THIS YEAR BENEFITING THE EFF
The event will benefit the Electronic Frontier Foundation, recently relocated to San Francisco from Washington, D.C. The EFF was founded by John Perry Barlow, Mitch Kapor and John Gilmore, and has become the leading public advocacy group for citizen rights in the emerging media.

Digital Be-In sponsors include Progressive Networks, MacWorld Expo, Fujitsu Teleparc, Chi Pants, Autodesk Multimedia, Pop Rocket, Imaja, Micro Publishing News, MicroTimes, and various other visionary concerns.

The Digital Art Be-In is produced by multimedia publisher Verbum, which has developed magazines, books, and multimedia CD-ROMs for creative professionals working with digital media since its founding by Michael Gosney in 1986. Verbum's current Multimedia Power Tools - Second Edition book/CD-ROM (Random House), Desktop Color Book - Second Edition (MIT Press), and The Official Photo CD Handbook book with 2 CDs (Peachpit Press), are leading resources for the new wave of digital design and multimedia production. Verbum's Digital Be-In has been produced every year since 1988, sponsored by prominent hardware and software vendors.

According to Gosney, "We're not about left or right politics; we're about taking the ideals and visions that emerged in the contradictory ferment of the '60s and translating them into evolutionary tools for the human race. The '60s spawned a community of hackers and artists that eventually gave birth to the personal computer, and is now creating the advanced software and integrated media technologies that give substance to the 'information superhighway' rhetoric. The Be-In celebrates the collective genius of those who are creating the new media, and encourages conscience and vision in its global, democratic implementation."

THE BE-IN WEBSITE AND LIVE NETCAST
Verbum has created a website (www.be-in.com) that includes information on the history of the Be-In, a collaborative "Mind Meld" area with forums on Be-In topics, and a Realtime Be-In environment that will serve as an interactive stage for a live broadcast of the January 11 event. The producers plan to develop the Realtime Be-In into an ongoing on-line event using advanced 3D navigable technologies. The website is optimized for Netscape Navigator 2.0.

For the precedent-setting netcast, Verbum's team of producers and "cyber reporters" will be working with MediaCast, a San Francisco

firm specialized in live internet events, ISP Networks, a Bay Area internet service provider, and Progressive Networks, creators of RealAudio technology. The netcast will involve several techniques: M-Bone - a broad bandwidth broadcast featuring full-motion color video and high fidelity audio; CU-See-Me - a video conferencing software that includes black and white video with monaural audio; Real Audio - a compression system which allows high-quality audio streaming (information that is uploaded to the user on demand, as opposed to being downloaded and then played); Living Web Pages, which incorporate captioned digital still photographs, QuickTime videos, Web Video (video grabs uploaded every second that can be seen without additional software), live chat between the participants and viewers, MPEG audio clips, and hotlinks to related sites.

HISTORY
The Human Be-In: Spark of the Counterculture

"A Gathering of the Tribes for a Human Be-In," announced on the cover of the new issue of the San Francisco Oracle, would feature Timothy Leary, Allen Ginsberg, Gary Snyder, Richard (Ram Dass) Alpert, Dick Gregory, Lenore Kandel, Jerry Ruben, and All SF Rock Bands January 14, 1967, 1 to 5 pm in Golden Gate Park. 30,000 people showed up.

The Grateful Dead, Quicksilver Messenger Service and others called the tune. Leary, in his first San Francisco appearance, uttered the sound bite of the decade: "Turn On, Tune In, Drop Out." Oracle publisher and Be-In co-organizer Allen Cohen characterized the event as a necessary meeting-of-the-minds, bringing together the philosophically opposed factions of the late 1966 San Francisco-based counter culture: on one side, the Berkeley radicals, who were tending toward increased militancy in response to the U.S. government's Vietnam war policies, and, on the other side, the Haight-Ashbury hippies, who, with the help of psychotropic compounds and various spiritual guides, saw the cosmic karma in it all, and urged peaceful protest and ongoing joyful celebration.

The Be-In focused the key ideas of the 1960s counter-culture: personal power, decentralization, ecological awareness, consciousness expansion. More encompassing than a war protest movement, the counter culture "questioned authority" in regard to civil rights, women's rights, and consumer rights, shaped its own alternative media - the "underground" newspapers and radio stations, and spawned new directions in music, art, and technology.

In the 1970s, the dynamic San Francisco area milieu, blending Silicon Valley with Haight Ashbury and Berkeley, gave birth to the personal computer - the ultimate gesture of personal power, "counter" to the then-prevailing main frame computer paradigm that implied centralized authority.

Verbum's Digital Be-Ins
The Digital Be-Ins, held each January in San Francisco during MacWorld Expo, bring together and celebrate the Bay Area and international community of artists, programmers, technology visionaries and entrepreneurs whose work with digital media is transforming the worlds of publishing, video and music production, education, training - and ultimately mass communication and entertainment. This community of talented, driven, dedicated people is contributing in an essential way to the development of a worldwide, multilingual digital network - its interfaces and architectures - and the new multimedia content forms that will move through it.
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The LEA Word Wide Web site contains the LEA archives, including all back issues, and the Leonardo Electronic Gallery. The Profiles and Feature Articles have been extracted from the back issues, and reside in their own sections of the site. It is accessible using the following URL:

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

Back issues, submission guidelines and LEA Gallery files are available via ftp anonymous, using the following method:

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password: your_email_address
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