YLEM celebrates 20 years of sharing ideas and interests in art and technology with an elegant cover image on our anniversary newsletter composed as a lenticular 3D print. The image was created in a collaborative effort between Digital Atelier, an artist collective of three women, Dorothy Simpson Krause, Karin Schminke and Bonny Lhotka (all of whom are members of YLEM) and Mirage, a full service litho house that specializes in printing lenticular imagery.

It is a perfect example of how YLEM members explore the frontiers of art and technology, taking the old (graphic design) and the new (three-dimensional imaging) and combining them into an exciting new medium, one that speaks viscerally of new dimensions in creative expression. 3D lenticulars have been around awhile, but with easy access to good computers and lenticular composing software, once again special technology reaches the hands of the artist. Digital Atelier explores the cutting edge of digital printing, both esthetically and technically. In doing so it creates educational and research techniques that push the boundaries of traditional media and digital art as well as the latest available print and display formats.

As one of the artists, Karin Schminke, explains: "Our work is created by digitally compositing various source images into a synergistic whole, therefore image layering is fundamental to us as a way of building a final composition. The lenticular process allows us to extend our use of layers by visually spreading them into three-dimensional space."

In making these three-dimensional images, the Digital Atelier artists design their own lenticulars from scratch, creating the image, interlacing it into its final form and from there, mounting the final printed image with its lenticular lens counterpart. Already the group has produced at least one hundred lenticulars for display. Schminke noted, "One of the things we all like about lenticular imaging is that the viewer is controlling what they see by the motion they create as they walk by the artwork, and in that way, it becomes an interactive art piece. We see the 'lenticular shuffle' as people walk back and forth trying to discern the entire image."

For Bonny Lhotka, the appeal of the lenticular process is "It allows me to manipulate visual space in a way that I've never been able to think of before. The lenticular process adds a dimension of virtual reality to the kind of images I was already making, allowing me to create a third dimensional space for extended shape and color in front of my existing graphics."

"Overall, I've found an overwhelming approval of lenticulars as a dynamic three dimensional art medium that's not necessarily found with two dimensional art. In one instance I had a presentation to a large communications company and when the first lenticular was pulled out and shown as a possibility for an installation, the corporate review people literally leaped out of their chairs and ran up to touch it. I've never heard of any one reacting that way to a piece of 2D art..."

"I'm a collage maker and I use existing imagery and combine them in particular ways," says Dorothy Simpson Krause. "With lenticular processing, I'm able to include movement and depth to my collaging work. Most people find these images fascinating and aren't sure what to make of them!" The challenge of using this process, says Krause, "is to use it expressively, not for its 'gee whiz' factor, but for its visual impact and to actually make an esthetic statement that helps you to carry your message."

The three artists of the Digital Atelier have both separately and collectively built a body of lenticular artwork and have not only discovered a new expressive graphics medium but have also discovered that people seem to want to spend time looking at lenticulars. Whatever causes people to stop for a second look is beneficial.

Mirage is a Canadian lithographic printing center that specializes in lenticular image printing and collaborated with Digital Atelier to produce our cover image. Mirage creative Director Ramesh Lalchan sees the challenge of art and technology every day in his lenticular printing projects and demonstrates that with his creation of our cover image.

A special thanks to the cover design team of Digital Atelier and Mirage that produced YLEM's 20th anniversary cover. We salute you!
**RESEARCH AS A CULTURAL ACTIVITY**  
by Stephen Wilson

**History may show** that the currently most known forms of computer art, such as computer graphics, are actually conservative, rather than radical forms. They are attempts to assimilate the new technologies to established art traditions. While they serve important functions of popularizing and investigating some new sensual and aesthetic possibilities of computers, there is a much wider world of possibilities that begs for attention.

—"An Arts Research Agenda for the 90’s," *YLEM Newsletter*, 12/89-1/90

**Some think that the major meaning** of the computer arts revolution is the digital images and sounds now possible. This is a fundamental misunderstanding of history. The most important lesson of the last 20 years is that significant technological innovation and science could happen outside established institutions and that artists could participate in the heart of the research process and help shape its research agendas. Binary math and programming that were once thought masterable only by PhDs are now mastered by pre-teen hobbyists. Esoteric research topics can have profound cultural impact. These are the lessons we need to build on.

Science and Technology are not the same thing: Many people are sloppy in their thinking about these terms. Any art that uses new technology is often referred to as art and science. Many artists have started to work with new technologies but many less are working with science. Science and technology are often conflated together. Historically science was seen as being interested in why and technology was interested in how. In the contemporary world, however, the relationship has become more complex with new technologies opening up unprecedented areas of scientific inquiry and science providing many ideas for new technologies. Artists have been much more involved with technology than science.

—"Myths and Confusions in Thinking about Art/Science/Technology," paper presented at College Art Association Meetings, NYC, 2000

**This has been research’s century.** Our lives have been radically changed by the results of scientific inquiry and technological innovation. From play to work, our lives have been filled with new gadgets and shaped by new understandings. Even more, research has changed basic concepts about the origins of the universe, the nature of life, time, space, and humanity.

We have not yet reaped research’s full promise. Many view research as something isolated, best left to specialists. Its processes and ideas are dimly understood and seen as alien to the main cultural flow, different in kind from ideas in literature, politics, or philosophy. Research is so profound in its implications for life and thought

continued on page 3
that it cannot be left to scientists alone. Science and technology must enter into the heart of general discourse and understanding.

Research agendas can determine the flow of the future. For example, researchers working on ideas such as ubiquitous computing (making objects intelligent and aware of their surroundings) are working on more than just new products. They are transforming the primordial relationship of humans to inanimate objects. The way that research unfolds will become a crucial part of our cultural heritage.

Decisions about research agendas require wide participation by those outside the sciences. Sociologists could help to insure that the widest range of ideas get pursued.

Some may suggest that there already is wide participation via citizen review committees or academic critiques of research. I mean something more fundamental and proactive — practitioners from many fields actually participating in the inquiries, determining their own research goals and undertaking their own studies.

There are signs it is already beginning to happen. The arts used to keep watch on the cultural frontier. As the cutting edge of culture became technological and scientific, the arts temporarily lost their way. They are reclaiming that sentinel role and demonstrating the possibilities for research outside the confines of science and engineering. Artists around the world are establishing their own research agendas and labs. They are furthering scientific knowledge and creating technological innovations as they pursue non-utilitarian research for purposes such as personal expression, social commentary, or basic curiosity. Some examples include stem cell sculptures, genetically engineered bacteria with texts embedded, new kinds of toxin-extracting plants for public gardens, broadcasts from inside the stomach, brain wave controlled music, performances focused on plasma state transformations of energy and matter, sound events of amplified seismic waves, zero-gravity dance, location based music determined by GPS, artificial life forms breeding and evolving on the Internet, artificially intelligent digital creatures that can read the emotional tone of speech, robots that can do acrobatics, movies that can read the viewer's position, gesture, facial identity, and so on. Organizations such as Arts Catalyst, the Welcome Trust art-science grants, and the journal Leonardo, present research and art without the usual barriers.

There are challenges to this kind of research. Many in the sciences and engineering may doubt that "dabbling" outsiders can be serious contributors. Those from other fields will need to master new skills and information. All will need to learn how to value and learn from what other disciplines can offer.

If the challenges can be overcome, the rewards are great. Our culture will be enriched by new lines of inquiry opened. And researchers will be rewarded by a new kind of public support and understanding that will replace the current mystification, hostility and distrust.

— A modified version of this essay, "Why I Believe Science and Technology Should Have No Borders," was published as an opinion editorial in the London Times Education Supplement <http://www.thesis.co.uk/> 12/7/01.

Artists wishing to pursue Wilson's research ideas can learn more at: http://userwww.sfsu.edu/~swilson/wilson.contacts.html
Remember the first IBM personal computer and the Macintosh in the early 1980s? YLEM, born in 1981, pre-dates them both. The slogan for YLEM’s big anniversary was “20 years: A century in tech-years!” The 1980s, when personal computers first came into the hands of artists were exhilarating. Nor did artists restrict their explorations to computers. Holography, copiers, video, neon, light and water sculpture, science-based painting and math-based sculpture fit under YLEM’s wide, wide umbrella. YLEM has always been full of pioneering spirits. Even since the 1960s and ’70s, certain members had been involved in technology art. How flattered we were when Kenneth Knowlton and Lillian Schwartz joined! They had done some of the first computer art in the world at Bell Labs.

Our 20th anniversary allowed us to reconnect with our earliest members, some of whom we hadn’t heard from in years. YLEM was home to many in the early ’80s who were developing their weird specialties in isolation, especially across the country. For instance, there was the Austin, Texas jeweler, Vernon Reed, who made animated LCD jewelry in an industrial lab after hours. We, the founders, had the excitement of reaching out and discovering these talented experimenters, and making crucial contacts with burgeoning industries and science specialists. One thing we never expected in this fly-by-night world was that we would stick together, enjoy sharing our art with YLEM audiences and Newsletter readers, and form lasting friendships.

YLEM Reunion Party

The delight of this first struck us at a reunion party we held in March. In an old, high-ceilinged room dimly lit at 111 Minna Street Gallery it was easy to feel the presence of Bohemians and Beatniks of eras past. A bizarre and lovely soundtrack prepared by Greg Jalbert accompanied us as we perambulated in idiosyncratic attire. Bob Gelman wore his fedora hat, Trudy Myrrh Reagan her bedouin dress with circuit board jewelry by Famous Melissa, and Eleanor Kent, the large, blue necklace she crocheted out of electroluminescent wire. She glowed. Old-timers were honored with polyhedral paper ornaments made by founder Trudy Reagan and LED “Blinkie” pins by Jim Thompson and Robert Sloan. We were honored that one of YLEM’s very first paying members (May 1981, $5), Ruth Asawa, was able to attend. Even in those days, she had monumental sculptures all over San Francisco, and was internationally-known. Since then, she became a moving force behind San Francisco School District’s School of the Arts. And she’s still doing her work.

YLEM 2001 Forums

YLEM was originally formed to conduct forums where artists and scientists, technologists and thinkers could all share what they do together. In so doing, we have helped set the cultural agenda. Over and over again, we featured fields like A-Life that later were recognized as new themes in art.

Throughout 2001, the Forum programs held at the Exploratorium were spectacular. We enjoyed visionary architecture, performances about the universe from its birth to the present, movie special-effects artists from Industrial Light and Magic, music and graphics morphing together in synesthesia, and at SomArts Gallery monumental light installations and performances by four multi-

Copper wire sculpture by Ruth Asawa, 1990.


Bronze light-sculpture gates by Marsha Nygaard. Photo of maquette shows solar-powered light sculpture and reflection pond for a city square.
Electronic music and graphics performance by composer, artist and dancer Sylvia Pengilly.


YMIM-603 (You Move It Moves) by Ed Duin. Interactive installation using polarized light.

The "Impact of YLEM" Exhibition

SomArts, the gallery Eleanor Kent managed to secure for the exhibit, was enormous, with 30' high ceilings. YLEM filled it with works by 80 artists, each submitting one work. Most were wall and pedestal pieces, with some exceptions: Several hung from the ceiling. One installation, conceived and built especially for the show by

Special Event: The Art of Burning Man

A special event organized by YLEM and Burning Man liaison Louis M. Brill and Burning Man curator Lady Bee previewed the art to be shown later out in the desert, as well as the fantastic structures that have been seen at Burning Man events in years past. About three times as many showed up as we had room for in the Exploratorium's theater (450!). Fortunately, they could sit

Barbara Lee, was a walk-through structure with sound and music pieces by three collaborators. Each trip through yielded a different sonic result. Several video artists' work played on a continuously-running tape. Two interactive pieces by Steve Wilson and Nancy Worthington begged to be sat upon and prodded. No juror was needed to produce the handsome show, for each artist was urged to send one piece, "your best." What single juror is schooled to judge digital painting, circuit board assemblage, infra-red photography, slumped glass, book arts, holography and other 3D technologies, video, polarized light sculpture and rapid deposition models from CAD designs? One dramatic piece by Ken Knowlton was a large assemblage of seashells that made a compelling portrait of Einstein 50 feet away.

September Focus

We picked September as YLEM celebration month, unaware of what would strike the nation partway through our events.

Being a collaborative organization (like a roomful of gag writers, as Peter Medewar put it), several projects were hatched during the year by people who had the vision to incubate them and draw needed helpers to them. We didn't quite realize until the projects all matured that this had become a mini arts festival! They consisted of "The Impact of Ylem" exhibit and reception, the CyberArts X conference and party, and Ylem's "100th Forum."

Saint Rubidium 5C by Larry D. Ackerman. Circuit board drawing in lightbox, 2001. This "saint" was the theme of the installation enjoyed by the YLEM Forum attendees in November. 

Sculptor Ruth Asawa, an early member.
CyberArts X Conference and Ylem Benefit

Early in the year Bob Gelman mentioned that since both YLEM and CyberArts were having an anniversary, we should team up. The original CyberArts conferences took place in Southern California in 1990, '91, and '92 and involved several YLEM artists. The CyberArts X Conference and Party, produced by Bob Gelman and Dominic Milano, was a benefit for YLEM.

It was scheduled to take place September 15 and 16. Then the dreadful events of September 11 took place.

The big decision was whether to go forward. We all felt odd doing anything normal, let alone celebratory, after this. Moreover, due to disruptions in air travel, conference speaker Dr. Fiorella Terenzi was stranded in Florida, artist/speaker Renate Spitz was similarly stuck in Brazil. Other speakers and attendees were unable to attend in person. Yet, we felt quitting would mean the attackers had won. Some new, local speakers graciously came, and they were fascinating. Both at the party and the conference special time and space were set aside to express thoughts and emotions. Many afterwards told us that coming out to the events meant a great deal to them.

The conference featured the most inventive minds in the interactive media industry. Here is just a sample of the topics discussed and the luminaries in attendance:

Bruce Damer and Mike Kaplan talked about their easy-to-use tool for creating online 3D communities, which Adobe has sponsored and is calling "Atmosphere." It was demonstrated at the YLEM benefit party on Saturday evening.

Art with cellphones and other devices was explored by Frank Schwartz of Gen3D. Big in Europe are: unique phone ringtones, online happenings and poetry, or whatever groups of people can think up. The anarchist, almost low-tech aspect appealed to many of us. Graphics are even possible. Noah Falstein of Inspiracy defended the action games that he designs, saying "We play because it's in our genes." It once improved our hunting skills. Linda Jacobsen, who spoke to YLEM years ago about "Garage Virtual Reality" told of her years as VR evangelist for SGI and how pervasive it is now in industry and the military. The hype may have died, but the capability is very much alive. Opting out of SGI and military applications, she has started her own company to explore constructive uses. Futurist Charles Ostman touted "nanites" (nano robots) for curing disease, for instance recoating nerves with myelin sheaths to alleviate multiple sclerosis. Ever the optimist, he felt this would happen soon. Jim Solomon and Nanci Magoun previewed their fabulous Xulu Entertainment Center where couples ride in "pods", controlling where they go in immersive computer-generated environments. These owe as much to flight simulators as movie special effects.

The CyberArts evening benefit party for YLEM enhanced the YLEM exhibit at SomArts with additional interactive art, software demonstrations and music. In the adjoining space, people explored a whole panoply of interactive displays like Peter King's interactive fractals created with video cameras. People wrote sentiments on a candle-lit "haiku wall." Several shrines to the dead were set up. In a theater section, integrated visuals with analog and digital images projected in real-time, laser light projected through fog, and computer graphics effects augmented the live musicians who seemed to be swimming...
in images. The dancer Simonia began her September 11th tribute slowly, shrouded, and culminated with a re-birth of vitality, dancing with a live snake. Diana Trimble added her voice and original poetry to the evening’s performances, which were capped by the presentation of a 20th Anniversary cake and gifts to Trudy Reagan and Eleanor Kent.

The 100th YLEM Forum

The following Wednesday, a different crowd of YLEM enthusiasts gathered for the "100th Forum." Since 1988 The Exploratorium has been our host. It was there in 1993 that Leonard Shlain first spoke on his book, Art and Physics. He presented his latest observations on this subject, with many, many more images. And Sylvia Pengilly, who showed videos of her work at three previous Forums, performed three works live and showed a fourth, Dark Places. The latter was based on images of war, lawlessness and poverty. This multifaceted dancer/composer/digital artist danced in white tights to her music against a black background, and what we saw on the screen was her silhouette filled with the changing graphics effects she had designed, moving to her musical pieces. These superb performances were augmented by interactive art exhibits in the lobby.

We thank the many, many volunteers who made this entire year of events a success!

Into the 21st Century

At a follow-up meeting, the YLEM Board and Advisors discussed how to build on success. High on the list are: more parties, more exhibits and documenting YLEM artists on a CD. More high-profile thinkers and artists will appear in the YLEM Newsletter. Copies of this particular journal will be sent to other electronic arts groups around the world. We hope to establish ties with them. Internationally, the tech art community will draw ever closer with interesting collaborations, and YLEM in-

BOARD OF DIRECTORS
Eleanor Kent  President
Gary Zellerbach  Treasurer
Patricia Tavenner  Secretary
Paul Cohen  Artist
Marius Johnston  Artist
Barbara Lee  Artist
Loren Means  Artist
Torrey Nommesen  Artist
Stephen Wilson  Writer

ADVISORY BOARD
Ruth Eckland  independent Artist
Theodosia Ferguson  International Society for the Arts, Sciences and Technology
Nathaniel Friedman  Dept. of Mathematics, SUNY Albany
Robert Gelman  Multimedia Artist, producer
Nancy Gorglione  Cherry Optical
Lucia Grossberger-Morales  Independent Artist
Roger Malina  Center for the Extreme Ultraviolet Astrophysics
Mike Mosher  Community Art Machines
Dr. Clifford A. Pickover  IBM Thomas J. Watson Research Library
Mary Stieglitz  Dept. of Art and Design, State University of Iowa
Larry Shaw  The Exploratorium
Fred Stitt  S.F. Institute of Architecture
Jim Thompson  LXT Inc.
Joan Truchenbroad  School of the Art Institute of Chicago

NEWSLETTER
Torrey Nommesen  Design
Loren Means  Executive Editor

FORUMS
Trudy Myrrh Reagan  Ylem Founder
Larry Shaw  The Exploratorium

WEBSITE
Marius Johnston  Director
An international organization of artists, scientists, authors, curators, educators, and art enthusiasts who explore the intersection of the arts and sciences. Science and technology are driving forces in the contemporary culture. YLEM members strive to bring the humanizing and unifying forces of art to this arena. YLEM members work in new art media such as Computers, Kinetic Sculpture, Interactive Multimedia, Holograms, Robotics, 3-D Media, Film, and Video.

**CONTACT INFORMATION**

YLEM Main Office  
P.O. Box 749  
Orinda, CA 94583  
Eleanor Kent  
ekent@well.com

**YLEM NEWSLETTER ITEMS**  
Trudy Myrrh Reagan  
967 Moreno Avenue  
Palo Alto, CA 94303  
trudy.myrrh@stanfordalumni.org

**YLEM’S WEBSITE**  
Marius Johnston  
498 Pershing Drive  
Oakland, CA 94611  
http://www.ylem.org/  
marius@pacbell.net