YLEM was loosely-organized non-profit arts group started in the San Francisco Bay Area. For 28 years it published the YLEM Newsletter and later, the YLEM Journal, held public Forums exposing artists to science, scientists to art and the general public to new artistic and technological expression. In its second ten years, it published the Directory of Artists Using Science and Technology illustrated with members’ work. It staged field trips to laboratories, industrial sites and artists’ studios, and mounted many exhibitions of members’ work. As founder Trudy Myrrh Reagan had hoped, long-time members became fast friends who supported each other’s efforts in this new field.

Upon reflection, it seems almost odd that just anyone can start a group like YLEM on a shoestring and be taken seriously. In what I call the “Brain Belt,” the snaking arc of campuses and tech businesses from Santa Cruz to Berkeley, news making developments spring forth regularly, and the news makers are not shy, secretive, mercenary or snobbish about sharing them. It is a blessing to live in Palo Alto and with very little effort meet with real pacesetters, ones who are so forthcoming and generous.

Political freedom played a part. I never felt anyone looking over my shoulder. I appreciate this freedom because I am old enough to remember the anti-Communist hysteria in the United States in the 1950s, when so many in the arts, journalism, and other professions were blacklisted. Many lost their jobs or clearances. Even Frank Malina, founder of Jet Propulsion Laboratory, was targeted because his chess club had a Russian member. (He retired to Paris began doing electro-kinetic art, which led to his starting Leonardo).

Because surveillance is usually done by mediocre minds, it is usually a tool to enforce conformity. The unusual is suspect. Also, it reduces people’s willingness to collaborate with strangers. One former Supreme Court Justice said, it stifles “the frivolity that characterizes ordinary life.” Our concern about it is justified.

As an artist in the 1970s, my influences were Georgy Kepes’ The New Landscape (1956) showing me abstract images more interesting than the abstract art of most artists. Also, the Whole Earth Catalog (late 60s–early 70s), where I found books on fluid flow, microscopic organisms, Fritjof Capra’s The Tao of Physics, and much more. The Scientific American’s puzzle editor, Martin Gardner, introduced me to the work of M. C. Escher about 1967. I also drew upon my father’s occupation, geology, and my husband’s, physics.

The “two cultures,” humanities and sciences, that didn’t interact with each other was very real then. I saw a gap to fill. By 1977 I was presenting a series of lectures to artists in Palo Alto called “Touch the Universe”. In 1979, as part of a grants-writing workshop, I created a mythical organization called Ylem, to be a small study group of artists and scientists. I had stumbled upon this name when creating a calligraphy “Scientists Alphabet” in 1979.
The Scientists’ Alphabet:
Axolotl, Breccia, Coccyx, Doppler, Epizootic, Flysch, Golgi, Haploid, Isomer, Jargon, Krypton, Logarithm, Monadnock, Noesis, Oocyte, Pixel, Quark, Rorschach, Syzygy, Turgor, Uvula, Vesicle, Wankle, Xylem, Ylem, Zeener

As you see, many of the words are of Greek origin. Ylem, roughly meaning “matter” in Greek, was adopted by George Gamow, an early proponent of the big bang theory. It generally means the matter and energy that flared forth to create the universe. A megalomaniac word!

My interest in science imaging, and a 1978 article in Physics Today called “How Computer Visualization will Change Physics” primed me for learning more about computer graphics. About that time, a young Howard Pearlmutter blew into town from Princeton. He was eager to connect with developers in computer graphics, his heroes. When I learned he was preparing a program for the Homebrew computer club at Stanford I begged to be invited. It was so far beyond what I expected that it was life-changing. Pearlmutter then spun off his own group, which he called “Graphics Gatherings.” It met monthly for a couple of years, then annually at “Digital Valentine” parties.

In all kinds of novel ways, he contrived to publish visually arresting Valentine invitations to them. I designed a couple of them.

The meetings were often large. He wanted to know the specialties of everyone in the room. Some listed all the computer languages they had mastered. This was a foreign language to me, and my 19-year-old son Russell and I felt a jolt of culture shock. Then began the overfull program of presenters. We heard from everyone from John Draper, “Captain Crunch” who hacked AT&T’s long distance calling code in the 1970s, to Leland Smith, inventor of Score, the music notation program now used by all the major music publishers in the world. (Installed base: a mere 300 customers). They were lengthy meetings!

Just watching Pearlmutter operate, corralling big names to speak like Ted Nelson (Dynabook) and Alvy Ray Smith (Pixar), and obtaining free space at Stanford to hold its meetings, inspired me with what was possible. I confided to him my ideas about an “Ylem” group, and he encouraged me to recruit at his meetings.

Another activity that flourished in the glow of the Graphics Gathering was the puzzle parties of Stan Isaacs. Isaacs was a coder for Hewlett-Packard, folk dancer, and juggler. (“It’s all patterns,” said he). He was crazy about the polyhedral wooden puzzles of Stewart Coffin. Indeed, when we walked into his bachelor pad, all kinds of mathematical constructions and puzzles hung from the walls and ceiling, a real fairyland!

He invited the coterie around Pearlmutter to his monthly puzzle parties, and six or eight of us responded (as if monthly Graphics Gatherings weren’t enough!) This continued until he got married, about 1984, and took up ballroom dancing.

Isaacs liked artists. He gave me and the other artist in the group, Marilyn Krieger, blank Rubik’s cubes to paint on, of which he had a unique and growing collection—a new art form.

Douglas Hofstetter’s book, Gödel Escher Bach, was just out, and we undertook to read it at each meeting. Pearlmutter walked us through some of its thorny computer science concepts. Like most others, we only got two-thirds of the way through it. (Bob Ishi told me W.H. Freeman had been interested in the manuscript, but backed out when Hofstetter refused to pare it down).

Though I was ever a klutz at math puzzles, I had already used some visual math in my works. Isaacs inspired me to find more uses for it in my art. For the puzzle group, I finger-knitted a wire Klein bottle, and put marbles in it. Scott Kim was an active member of this group.
Howard’s friend, Scott Kim, was active in the discussions. Later, Kim and Isaacs would be active in periodic commemorations of puzzlemeister Martin Gardner. Kim would design puzzles for Discover magazine.

And so it was that I held the first meeting of YLEM on February 1981, purely to lay out an organization plan. (Originally it was Ylem in lower case, since it is a real word). Among the 20 people, many from the Graphics Gathering, was Scott Kim, who is just about to publish Inversions; Bob Ishi, chief book designer at W. H. Freeman; Glenn Entis and Carl Rosendahl, two of the four partners who would start Pacific Data Images (later folded into DreamWorks), and of course, Pearlmutter himself.

I made the point that in other art movements there has been a strong group of people who all knew each other, like the Impressionists. I told him that it was refreshing to meet people for whom the boundary between art and science didn’t seem to exist, and that we would make the definition of who could be a member fluid. “Anyone who is fascinated may join.” I showed them what we could do better as a group.

It was a yeasty time, exhilarating for me to meet people who knew they were about to change the world (some did, some didn’t!). For years I was swept up, riding a wave that took me away from introspective work on my own art. I loved the ride!

The first meeting, held at Fort Mason in San Francisco in May 1981, featured Carrie Adell and her jewelry inspired by science images, Walter Zawjoiski, staff artist at SLAC, and Dale Seymour, specialist in visual math. The well-known San Francisco sculptor, Ruth Asawa, and Bob Ishi became the first dues-paying members (five bucks!).

The second YLEM Forum was held in conjunction with the Graphics Gathering at SLAC in July 1981. On the program were Larry Cuba’s minimalist animation, Two Space; and so (commonplace now) a sonogram video of an unborn baby. This drew “Aaaahs” from the crowd. Robin Samelson, with Scott Kim and Glenn Entis, led a group of six in a rather hilarious skit to illustrate how the central processing unit (CPU) accesses random access memory (RAM) for data. They used trays to represent stacks in memory. When computers were new to the public, people in the know felt it interesting and important for it to know what was under the hood. It was part of “computer literacy.” This was back when we learned computers took time to “boot up” because it ran a “boot” program telling the machine it was about to compute, essentially pulling itself up by its own bootstraps. Now it seems silly to burden yourself with this, like learning how your thermostat works.

Two who attended became devoted members, making substantial contributions, Eleanor Kent and Louis M. Brill. Their contributions to YLEM would be many, and their friendship would last beyond the 28-year life of the organization. In general, the people who became active saw YLEM as a springboard, where their ideas could develop and reach a larger audience through the organization. I saw their art evolve into new forms with such new stimuli. Thirty years or so later, I am more appreciative than ever of the group of people who coalesced around YLEM, continuously giving their time, and expanding its art and
technology mission. An overview of just some of the players gives a flavor of the group. Needless to say, old fashioned, face-to-face friendships were the glue that held us together for 28 years. At our 20th reunion, with both original members and recent, younger ones, we felt as if we were a tribe!

Eleanor Kent in our first three years organized tours of computer graphic companies in Silicon Valley. This was a time when almost no artists owned computers, and no low-end machines were designed for graphics. At the time, she was doing color copier art on a huge machine in her upstairs Victorian bedroom that she leased from Xerox. Later, she would collaborate with algorithmic computer artist Craig Cassin. He designed patterns for her to knit. Eleanor organized exhibits, Forums and did some of the endless work of contacting members and encouraging them to continue with the group.

Louis M. Brill would organize some of our most successful forums, edit newsletters on his areas of expertise, and periodically procure holographic stickers, which, combined with an artist’s touch, became unique covers for the YLEM Newsletter. He proposed, and in the 1990s we produced, several editions of the copiously-illustrated Directory of Artists Using Science and Technology.

Scott Kim was a delightful friend of Howard, a polymath skilled in music and computer science. He was working on a book of his calligraphy puzzles called Inversions, wherein the words read the same from several directions. He invited me to engineering professor Robert McKim’s class, where he was the teaching assistant. Every class was a feast of exercises designed to break up formulaic thinking. On the day I was there we tried writing longhand while looking at our hands in the mirror. Movies on M.C. Escher were shown. McKim was author of Experiences in Visual Thinking, because he found that many students coming into engineering were static and non-visual in their thinking. Many of his graduates went on to design using his brainstorming and prototyping practice, including David Kelley of IDEO, the firm that designed Apple’s first mouse.

McKim spoke at two early YLEM Forums. He also introduced us to Donald Knuth in the computer science department, who was a mathematician was impatient with the limitations of computer output for mathematical notation. For his book, he spent seven years developing a precise definition program.
for typefaces, which became Postscript language. For layout he developed TeXt, forerunner of all page layout programs.

Scott and his girlfriend, Robin Samuelson, couldn’t have been more helpful to the fledging YLEM organization. One evening, we were all sitting at a table folding newsletters to mail out when we were discussing some murals Robin knew about. She asked when I had seen them. When I said “1957” she and Scott looked at each other: that was about the year they were born. I suddenly felt older.

Another young couple from the graphics gathering was Glenn Entis and Pam Green. Entis opened the door to us for demonstration at Ampex. This was part of Eleanor’s computer graphics tours. He was working with Ampex on a huge computer graphic drawing system so huge the parts needed air-conditioning. It could be operated by someone who knew nothing about computers. Today, we have GUI interfaces and these functions on our desktops. Pam, who is studying product design at Stanford, provided beautiful drawings she did for biology for the newsletter. In 1987, she did a talk on her thesis subject, fire art, when Burning Man was still a gleam in the eye.

We were all friends of Pearlmutter, and we worked with him to produce “Digital Valentines Parties” for the Graphics Gathering.

Scott cared very much about anything to do with lettering, layout, and publishing. He critiqued my newsletter layouts, and introduced me to Photoshop, so wondrous and new then. With his status as a student, he was allowed to sign up for any available room at Stanford, which was a venue for our meetings. Alternately, we met at California College of Arts and Crafts in Oakland.

Another friendly presence was wheelchair-bound Joe Villareal. He offered his computer to help me with tasks for the newsletter, membership lists, and mailing labels. Villareal lay in his bed keyboarding, for friend had detached it from his Apple II. He used big TV for the display. (It wasn’t until 1983 that I got my IBM 64K machine for $3000 – the price of a good used car!). He got us a tour at Stanford in the engineering lab of Larry Lifer, whose students were working on mechanical, computer-driven prostheses for the handicapped. (Villareal’s efforts through the years have been to use computers for get out the vote, working with his activist brother in Texas).

Lucia Grossberger-Morales, married to Apple developer Harry Vertelney, met us in 1982. She continually surprised us with the uses she found for art on the 48K Apple II. For instance, she learned its machine language for her kaleidoscope project. With a few keystrokes, the user could select different...
parameters for a pattern that would change through
time. The whole thing was viewed through a 6-foot long, 18”
diameter metal tube enclosing two long mirrors. This setup was placed in front of the computer screen. For YLEM, she helped me with our exhibits and had spectacular work in almost every one. She and Lillian Quirke of De Anza College in Cupertino taught the first computer graphics classes for beginners.

Some intellectually very challenging YLEM Forums were produced. Eddie Oshins, cousin to Pearlmutter and Robin Samelson spoke to us about a combination of quantum mechanics and computer logic called “quantum logic.” He took me to a series of talks at Stanford by Ilya Prigogine on “dissipative structures.” These are how life forms manage to create greater and greater complexity in spite of entropy. Entropy only applies to closed systems at equilibrium. Life forms are in non-equilibrium, continually taking in energy from food, and shedding waste.

Our focus was not only on technology. Shoshanah Dubiner arranged a concert on Tibetan bells at one Forum, and a field trip to The Tree Circus in Scotts Valley. It was an orchard of sycamores curiously grafted into geometric patterns. Soon to be demolished, it would be replaced by tech industries. Geology was the theme of two field trips I set up, but these attracted few of our members. I guess they weren’t the outdoor types.

So many others were helpful in those early years! The organization became a loose collection of activities, Forums, Newsletter, Directory, studio and laboratory tours, operating somewhat independently. They were kept in sync by occasional board meetings. When we met, we were bouncing ideas off each other like a roomful of gag writers creating a story.

There was a buzz, a curiosity, in Silicon Valley surrounding uses for the computer. In 1983, Tapestry In Talent, a huge annual San Jose art and music festival, selected computer art as their 1983 theme, and contacted me. They showed me a cavernous hall, the center of which was 500 square feet allotted for our exhibit. Using my recent exhibit design experience at the (now defunct) California Craft Museum, I spent six months pulling it together. Grossberger-Morales exhibited a long wall of computer digitized and distorted faces. Before the capability was built-in, she was improvising with a video camera pointed at the computer screen. Jaron Lanier showed a nonviolent computer game called Moon Dust on the Commodore 64K. A real computer graphics pioneer from Bell Labs, Kenneth Knowlton, had moved to Palo Alto. He provided a portrait created from 24 double-9 sets sets of dominos that he called Domino Player. Being 5 X 6.5 feet, it was a show-stopper. In all, 19 artists were represented. Overhead were large patchwork quilts that I had borrowed from a senior center that looked pixelish.
Two people who their weight to YLEM and its crucial early years were Stephen Wilson and Roger Malina. Wilson, who joined while still a graduate student in Chicago, was one of the first members of the YLEM board when he arrived in San Francisco in the early ‘80s to teach Information Arts at San Francisco State University. At that time he was working on *Using Computers to Create Art*, the 1986 primer on computer media.

I will never forget being invited to the reception for *Leonardo* in San Francisco by Roger Malina. His father, Frank Malina, had just died. The whole magazine was being transferred there. This magazine, and its organization, the International Society of Art, Science, and Technology, was so respected by us! Later, he said “If YLEM didn’t do forums, I would have to.” In this way we worked together. For a time he also was a member of the YLEM board.

Always at my right hand, setting up for forums, doing graphics layout for the newsletter, and being my computer tutor, was my son, Russell Reagan. He now works in bioinformatics.

The next year, Prof. Marcia Chamberlain at San Jose State University, organized the first CADRE Conference at San Jose State and Mission College. YLEM members were included in this marvelous production, as exhibitors, curators and presenters. It featured a number of eye-popping projects: for instance, a huge display of computer-controlled water droplets that dropped “shapes” into space; some battlefield applications of computer simulation; and Ron Resch, who described his gigantic egg-shaped sculpture in Canada he made of triangular aluminum shapes, all calculated by computer.

Inevitably, sickness hit when I was due to give a Forum. Not only that, I had a family, my own art, and was helping refugees. I was running out of gas. Bill Henderson became my vice president, able to fill in for me. He had been the architect on Lyndon Johnson’s project to house astronauts on the moon, abandoned because of the Vietnam War. Now, he was doing computer art.

At the CADRE Conference, designer David Healy spotted our amateurish newsletter, and offered his professional help. His specialities were photo typesetting and hand-pasted layout, both soon to be outmoded. He did our newsletter for a year. The last one was both glorious to see and awful to do. On the occasion of SIGGRAPH (the premier computer graphics technology conference) being held in San Francisco in 1985, he designed it completely using the wonderful capability of computer page layout. We made numerous copies to pass out at the conference. It was awful, because his 128K Apple had very little RAM. This necessitated putting in and taking out different floppy disks continually. He was using a beta copy of Aldus PageMaker, not completely bug-free. It was the last newsletter he did for us!

SIGGRAPH ‘85 was a blast for us! We had artists in the art show, and organized a “Birds of a Feather” meeting where we showed slides of our art. Out-of-
towners did, too. Itsuo Sakane, prominent in the art-science-tech scene in Japan, was there. At SFMOMA, Lucia Grossberger-Morales was co-curator of a vast display of interactive art called Input/Output. Ed Tannenbaum, whose computer program multiplied and colorized dancers’ movements, gave a fine performance at the large auditorium next to it.

I was suddenly working very hard. Bimonthly Forums and field trips were easy, newsletters were hard. After five years, just when I was ready to give a YLEM up, Eleanor Kent organized a nominating committee. It recruited two frequent Forum attenders, Beverly Reiser and Fred Stitt. Reiser would remain president of YLEM for 14 years, keeping YLEM current, her antennae always tuned to the Next New Thing. At that time, she was designing sculptures combining mirrors, sand blasted glass, and neon. She herself changed over the years from a sculptor into a multimedia artist. In 1987 she organized an exhibit of light sculptures and an YLEM dance performance with animated computer graphic “stage sets” both in Walnut Creek and Palo Alto. (Later, in 1994 she would be part of our team that designed “Art on the Edge,” one of the first art websites ever, and a prize-winner).

Stitt, a protégé of visionary architect Bruce Goff, hosted a fantastical high-tech YLEM Halloween party in 1985, and twice treated YLEM Forums to talks on futuristic architecture. Founder of San Francisco Institute of Architecture in 1990, he most recently started the Universal Green Academy, presenting worldwide free education in green building and sustainable design.

His office post office box became YLEM’s address. That, the loyalty of our crew, and a generous $1000 annual gift from my mother, gave us stability. Stitt transformed the YLEM Newsletter for a brief time into a real art and technology journal, but it was not sustainable. We limped along with a typewritten calendar of events drawn up by President Beverly Reiser.

Then, Josepha Haveman at CCAC (California College of arts and Crafts, later simply CCA) offered to do layout with her newer, larger Apple II if I would edit it. She was a strong-willed woman who had helped her family survive in Nazi-occupied Holland by working on the family fishing boat. “Getting food was primary!” she said. Her paintings were geometrical, influenced by Mondrian and Malevich.
While helping me with Forum setups, he recruited his friend, John English, to do the technical connections. In those days, when technical screwups at meetings were normal, I was grateful to have competent help, at last! (John’s father, Bill English, had been the engineer on Douglas Engelbert’s historic 1968 computer demonstration that was transmitted from SRI to San Francisco over the telephone.

Both English and Louis Brill were light show enthusiasts, and shared it with YLEM. English produced a Forum on video synthesizers, Brill one on lasers. Both of them probably came to YLEM member Nancy Gorglione’s outdoor light show at the Marin County Civic Center. I know Eleanor Kent and I did! While laser images were projected onto a the wall of a giant silo, a jazz band played, and hundreds of us were waving chemo luminescent wands beside a reflecting pool in sync (more or less) – a beautiful sight!

Our first Canadian member, Julian Rowan, was our third who had also been involved with Experiments in Art and Technology (E.A.T.) in New York started in 1967 to bring artists and engineers together. The others were Louis Brill and Carrie Adell, who hung out at E.A.T. as teenagers. Rowan observed that organizations like ours lasted only as long as the energy of their founders held out, 5 to 6 years. “But,” he said, “I’m joining you anyway!”

Subjects that YLEM investigated preceded, sometimes by years, the era when they became buzzwords. It ferreted out new developments and set the agenda. Some of its members were developers.

Examples from YLEM’s first Ten Years:
1981 - Forums themes: education using computer graphics and games on small computers; dissipative structures in biology; and brain function research (before PET scans and MRIs)
1982-4 - Computer graphics tours of firms in Silicon Valley.
1982 - Forum demonstrations of teleconferencing; Mathematics shown as computer graphic animations, Turning the Sphere inside Out, v. 1.

Russell Reagan critiques Trudy’s graphic design work
Performance by Jodie Gillerman at CADRE, Santa Clara, CA 1984

Input/Output. SFMOMA during SIGGRAPH ‘85, co-curated by Lucia Grossberger-Morales
1983 - Computer courses for artists at De Anza College taught by our members. • a visit to Donald Knuth to learn about TeX and MetaFont • An animator told the Forum of his dream of being able to compute facial expressions. (In those days, each frame of an animation took 30 minutes or more to compute. Each minute of film has 30 frames. The human face has many muscles to show emotion, each needing its own algorithm) • We showed infrared images of dancers, • holograms with animation. • Graphic tablet development. • A prankster told how he projected the outline of a giant eye onto the TransAmerica Pyramid during the King Tut exhibit using laser light projection from his friend’s apartment. (The corporation sued, won $1 in damages). At the same Forum, we saw animation by means of holography.

1984 - Forums on biomimicry (then called Bionics) and: the Lorenz Attractor was shown in animation (from Chaos theory).

1985 - A Forum demo of 3D TV. • Video synthesizer demo. • the first YLEM Newsletter to be produced with new desktop publishing software on the new 128K Macintosh.

1986 - Forums with demos of animated electronic jewelry, computer-aided sculpture. • An YLEM Journal article by Fred Stitt described the digitization of all media, Xandu, Dynabook; also AI (Artificial Intelligence), VR, (Virtual Reality), and Nanotech.

1987 - Forum talk about NASA’s early experiments in VR. • Turning Computer Aided Tomography (CAT) scans plus Computer Aided Design (CAD) processing into models for surgery; scanning tunneling microscopy showing individual atoms.

1988 - Demo of video capture, images of participants’ faces output onto cloth at the Forum • A report on the Space Bridge “Teleconference of US citizens with ones in the USSR to promote peace.

1989 - December YLEM Newsletter discussed hypermedia, hyperlinks, telepresence, robotics, VR, and expert systems for art. • Fractals and art • Demo of interactive art (Mandala Software).

An art project faxing art to six countries involved several YLEM members

1990 - We discussed avatars and collaborations, telepresence, the International Electronic Cafe in Santa Monica started by YLEM members • YLEM Newsletter articles treated Optical Character Recognition (OCR) and putting libraries online; and High Definition television (HDTV) • Robin Samelson introduced us to herbal medicine, at that time regarded as quackery by most people.

1991 - One Forum showed a 3D computer-simulated fly-by of Mars, • another showed how virtual reality could be done on home computers

A difficult aspect of giving Forums was finding free space and equipment. We camped out in various rooms at Stanford and CCAC. Beginning in 1986, Bev Reiser’s husband at San Francisco State University signed us up for various rooms, which had some equipment. But it was a stroke of good fortune in 1988 when we were invited to meet at the Exploratorium. Our good wizard was Larry Shaw, Exploratorium physicist. The place had a certain respectability, it was easy to find. Shaw even ran the equipment!

ISEA (International Symposium on Electronic Art) began in 1988. In 1989, when it was held in Josepha Haveman’s home country, Holland, she attended and came back with glowing reports. The following year, it was in Australia, and Beverly Reiser was invited to speak. Over the years, many YLEM members would be involved.

At decade’s end, our New York members Cynthia Panucci and Peter Terezakis started ASCI (Art, Science Collaborations, Inc.). Cynthia told me personally that she had in mind an “YLEM East,” but it took off and became much more, organizing conferences and high-profile exhibits.

The 10th anniversary party was a combination of high tech and low DIY – do your own. Our host, Walter Alter, opened his funky studio in the warehouse district of Oakland to us. He was a character! He had coated his Volkswagen bus with eye-catching gnarly
black asphalt. He was trying to build a sophisticated computer music setup out of castoff computer parts. He made manifestos! He encouraged people to shout down the commercials on their TVs! (This was the theme of a hilarious Forum). At the party, we had perhaps 25 people indoors and out showing off their latest projects.

When I heard Alan Alda, star of M.A.S.H., say that he had been privileged to work with good material, with artists he respected, for an audience who “got it,” I thought, “That’s what I got from YLEM!” Alda added, “and to be paid.” We weren’t paid. 90% of it was a volunteer effort.

Zach Stewart, director of Canessa Gallery where YLEM often held events, says he liked YLEM because “You’ve created a space for yourself outside academe and the art world. People can simply be themselves, without eyeing their rank on any ladder.” He also can feel when he’s in a room with a bunch of us, “Here’s a group of people who love the unknown!”

I believe we succeeded in the goal set out in our statement of purpose when we applied for nonprofit status in 1983:

Ylem, a nonprofit 501(c)(3) organization, exists to connect art to the driving forces in our culture: science and technology.

The Florentine Renaissance artists and the Impressionists all knew each other. Ylem exists to create such a community of artists. Studio visits, informal field trips to labs and industry, parties and discussions forged these friendships. Access to equipment for artists has often resulted.

The artesian pressure of talent from the group opens up opportunities to exhibit and perform in an otherwise skeptical gallery midyear. Artists in Ylem use technology for positive purposes, and make abstract science ideas more concrete and important. They believe in the power of ideas to take form and spread, like the original matter, I am from the Big Bang, into the universe we see today.

Instead of merely talking shop about particular techniques, Ylem will explore the impact of new technologies on society. Will arts spread like wildfire through new media channels like the web? Only if artists train themselves to use them.

(For years, when writing about YLEM I stubbornly wrote it YLEM, saying “It’s a real word, not an acronym.” At a board meeting in 2000, we chose to write it in caps, because it stands out well).

Though our publications were biggest headache and expense, they not only drew members to us from all over the world, but validated the astonishing works being overlooked by the art establishment. Our name did get us into some laboratories and art studios, and we saw a panoply of exotic equipment and magical art. Beginning in the 1990s we had some large and impressive exhibits. The subjects treated in the YLEM Forums, begun in 1981, were wide ranging. Their format was four to five 20-minute talks or demonstrations. We tried several times to videotape the forums, but the results were miserable. Low end cameras and editing equipment were still primitive. When Technology, Entertainment and Design (TED)
started in 1984, it also set a 20 minute limit, and treated a wide range of subjects. I attended one in 1993, which cost $500. Now LASER (Leonardo Art Science Rendezvous), sponsored by Leonardo, has adopted a similar format. Talks can be streamed from the Internet. I would have liked for the YLEM forums to have reached a wider audience like they do now, but you might say that YLEM proved the concept works!

We did, of course, network about what was new in a very new field. At first, we drew together scarce information. Later, when information was too plentiful, our Calendars printed in the newsletter and online served as a filter or agent for focusing on the particular information our members sought.

And we enabled very bright people with similar bizarre interests to find each other. Decades-long friendships developed, even across the world. At first, we were a home for isolated people working in unusual media, especially in other parts of the country. Our growth was exponential the first 5 years, peaking at 250. A decline in membership began in the mid-nineties, hovering at between 140 and 180. By then, we were only one of many, many such organizations all over the world. The fascinating synergies that happened at YLEM Forums and other programs created shivers of bliss. Sometimes it felt like mental-bungey jumping.

While I was studying Logo language for kids in a workshop for K-12 teachers, someone asked me ‘What do you teach?’ I thought about my work with YLEM, ‘I do enrichment programs for gifted adults.’

Several circumstances caused membership to decline, which affected our ability to produce publications, and for it to become increasingly difficult to find rent-free space in which to meet. I age, along with our membership, and no longer had the drive to keep organizing. But, for 28 years we had a good run!

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**APPENDIX**

**Trends YLEM witnessed:**

1. A few artists wanted to do, say, telepresence, before the technology was really available. Sharon Grace at SFAI, talked to us about her telepresence event in the late 60s, using borrowed radar dishes from NASA,

2. The Cold War and Ronald Reagan’s saber-rattling were depressing. Artists like Eleanor Kent were intent in getting their hands on high-tech to use it for peaceful, not military, purposes. I myself started YLEM to put out some positive energy.

3. The fall of the Berlin Wall meant new exchanges with the East. Steve S’oreff did a wonderfully funny installation in Prague, Krystian Panzica has also cultivated connections with artists in Prague. Bruce Sterling wrote an article for Wired about the art scene in Prague. YLEM Newsletter did a story about a Berlin sound artist after the wall fell. Frank Dietrich and Zsuzsa Molnar (husband and wife) were Silicon Graphics’ European reps, and did a lot of business with Russia.

4. Holography was hot for awhile. I visited the Holography museum in NYC, and a gallery of it in Paris. Gary Zellerbach owned the Holos Gallery in San Francisco. Nancy Gorglione combined her expertise in it with laser light shows. We’ve had a lot of holographers in YLEM. 1999 was the year that the fine-grained film for it became prohibitively expensive, when circuit-board makers phased out photo masks for circuit boards in favor of computer designs, and the commercial market dried up. Nancy, however, experimented with rival Polaroid technology described in our 15th anniversary newsletter.

5. The 60s culture used lasers and other high tech for light shows in the ‘80s, and were extremely interested in Virtual Reality (VR). Louis M. Brill knows more about this and the holography scene. L.A.S.E.R. was an organization in SF that he ran. Jaron Lanier and his friends tried to start a company to make VR accessible technology. Also, Louis Brill’s friends’ company called Sense-8. Linda Jacobson wrote a how-to book. But it was just too expensive and cumbersome an activity. It has to be awfully hi-end to be minimally convincing. VR seems to survive in amusement park settings and at EMP in Seattle.

6. We watched computer graphics mushroom: graphic design, and now movies, go digital; and be streamed online. We saw animation become a real option for self-expression; and 3-D graphics. The move was fuelled by the needs of commercial applications: print and TV advertising, movie and broadcasting special effects. Art schools grew as careers opened up in entertainment and design. Now, the state of California offers scholarships to art school,
Eleanor Kent giving computer demonstration, 1986
Jean Millet demonstrates her analog biofeedback sculpture, 1983

Sylvia Pengilly, computer composer and dancer, 1993

BodySynth® turning dance movement into music, 1990
because the industries here are begging for talent and hiring from overseas. Steve Wilson, who prowled the edges of what’s technically possible, found it harder to find students willing to study for intellectual reasons. They want job training.

7. Overseas: Globalization is now taken for granted. Conferences in electronic arts commonly have web events and a virtual online gallery. That’s only one thing the web has changed. Art events of all kinds, not just in the computer art clique, take place digitally across national boundaries. Schoolchildren do it. I have written about how YLEM got in on the web early. (Also, before that Lillian Bell and others were doing fax art events. Sharon Grace (not an YLEM member) at SFAI did remote sensing events in the late 1960s).

8. All the arts became digital, making it easy to combine stills, animation, music, writing. Diane Fenster did a piece in 1992 that started as Photoshop collages. She included a short story with each. This became a poignant series. Then, she put the whole thing online, with a voice reading the stories. Lynn Hershman (not an YLEM member) did the first feature-length digital film, about Ada Lovelace. Multitalented people were no longer freaks that people kept telling to settle on one medium.

9. Art became industrialized. Aldous Huxley made the distinction between the Renaissance craftsman, who would be expected to accumulate in his person more and more skill with practice, and Industrial Man, who was constantly being asked to change his way of working to conform with new machinery to do his job. Sound familiar? We’re on a treadmill of upgrade expense if we are serious digital artists, as well.

10. Two things were issues when we started: Access to decent equipment, and large, archival output. How far we’ve come! Even traditional artists are selling large giclées of their watercolors! Output onto different materials was always of interest. In the early days, artists used billboard technology to get really big printouts. Some artists did tiles, rug designs. Now, experiments on cloth, metal, clear plastic and lenticular screens are possible. 3D prototyping is changing the discipline of sculpture.

11. Computers helped artists with their business, being God’s gift to resumes and address lists. Earlier, competition curators judged art from actual work, then from slides. Email, sending attached files, now makes it easy to submit work. Digital photos and CDs became the archiving medium, though their longevity is not assured.

12. Email chats, and later, blogs, made some kinds of art possible. In the early ’90s Lucia Grossberger-Morales edited an YLEM Newsletter based entirely on a chat on networked electronic art.

13. Email had an effect on how arts organizations run. Board members could be farther away. Quick consultations could take place. Unfortunately, flaming could also take place.

14. A hunger for the actual, the unregimented, the unprogrammed led to the popularity of events like Burning Man and Maker Faire.

15. Out at the edges, artists like Eduardo Kac are probing what identity is in relation to digital information, trying to see how many places they can be at once with digital technology. Michael Kan is deconstructing the hardware in interesting ways. Art, tech and biology are being combined.

16. Algorithmic art, which was the first wave of computer art when that’s what computers did best, is no longer in the spotlight, but to my mind it is one of the most interesting, intellectually challenging aspects of computer art.

17. Publications went from being photo typeset and hand-pasted, then printed offset; to being laid out in a page-layout program and xeroxed from computer printed masters; to files being sent electronically to the copy shop; to being distributed electronically as PDF files.