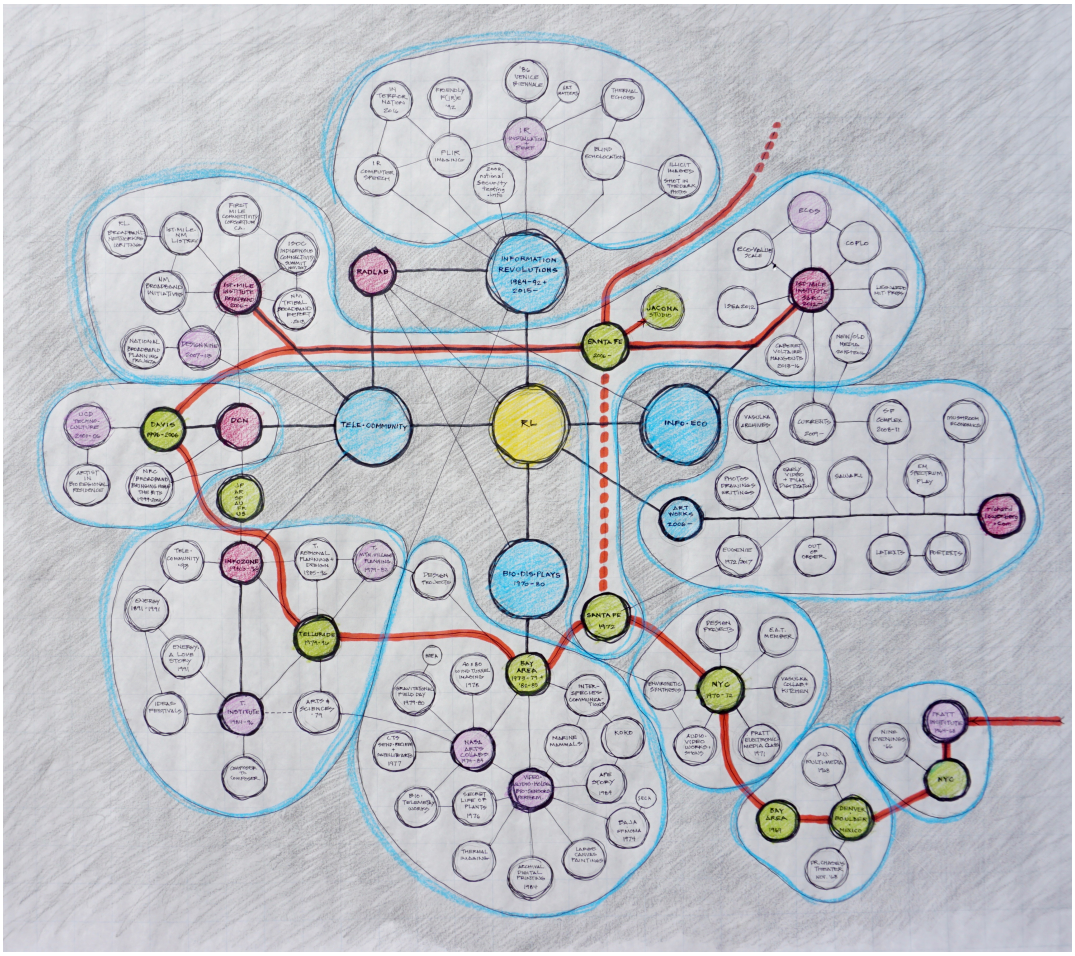
Richard Lowenberg

Richard Lowenberg, born in Haifa in 1946, is an artist, planner/designer and eco-cultural activist. He has dedicated his creative life to investigations, understandings and artful realization of works presenting and collaboratively setting examples for 'an ecology of the information environment', and the resulting opportunities for development of a cultural and ecologically rooted economy'. Creative works have been presented, exhibited and published internationally over 50+ years.



Creative Works Ecosystems + Paths / Places / Projects – 1964 – 2018 +

This recent conceptual sketch diagram presents my chronological path, places and projects over 50+ years. Beginning in the lower right, an orange path winds around to the left and back to the upper right, passing through green place marker circles (from NYC to the Bay Area, to Telluride, CO, Davis, CA and Santa Fe, NM), each place showing connections with major project works in that area. Central to the diagram is the self-referential 'RL', connecting to four primary project initiatives: Bio-Dis-Plays, Tele-Community, Information Revolutions, Info-Eco, plus a fifth circle connecting to current personal art works.

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Richard Lowenberg

A chronological and place-based listing w/ brief description of creative works and involvements.

Born: Haifa, Israel, Aug. 31, 1946. Emigrate to the U.S. in 1951. U.S. Citizen

Grew up on farms and edge-burbs of Freehold + Lakewood, NJ, as quiet, distracted, creative kid. At age 11, found/read a worn paperback, The Book, by Alan Watts. In my teens, I wondered what Leonardo would be doing if he were alive today. Arts engaged.

1. NYC, 1964-68

Pratt Institute, Brooklyn, 1964-68.
Architecture + Design + Photography + Film.
Excellent design education amid NYC at a creative high time.
Maplethorpe among classmates/friends.

Student assistant to Bob Rauchenberg at 9 Evenings.
Assistant to Elliot Erwitt and others at Magnum Photo.
Experimental design, imaging and performance works, with student cohorts.
Create multimedia event for opening of Lord Snowdon's photography show at MoMA.
Increasingly 'searching', I drop out and hitchhike west to experience Springtime in the Rockies.

2. Denver – Mexico – Boulder, 1968

Teach first Denver University Multimedia class, via Maynard Tischler (Spring Quarter).

Spend Summer months in central Mexico (San Miguel de Allende, Guanajuato, Oaxaca, Huautla (Maria Sabina) +).

Returning to Boulder, create "Dr. Chase's Third, Last and Complete Work" theater work, with Tony Lent, Bill Hess +, produced at The Changing Scene, in Denver; busted by the vice squad on opening night; the theater was shut down the next day by the Fire Department. I head west.

3. Bay Area, 1969 + 1971

Tear-gassed on first day in Berkeley (welcome to People's Park).

Meet and conduct brain wave experiments with Dr. Joe Kamiya, at UC Medical Center's Langley Porter Neuropsychiatric Institute.

Meet and befriend Bruce Hatch + Doug McKechnie (Moog), Don Buchla, Scott Bartlett (film) +

Sex, drugs + rock & roll (lots of good stories).

4. NYC, 1970-72

Return to NYC in late ’69 to deal w/ Vietnam draft problems + dive into creative involvements.

Befriend, borrow equipment, explore ‘signal’ + video-play with Steina and Woody Vasulka.

Become E.A.T. member, via Bob Whitman.

Freelance design work for SOM, M. Paul Friedberg, Francis Thompson, Chermayeff & Geismar, Warner Leroy, Bucky Fuller (World Game), + .

Inspired/influenced by works of Robert Wilson (former Pratt design student), Richard Foreman, Tadeusz Kantor (at La Mama), Hans Haacke (at Howard Wise Gallery) +, and late nights at St. Adrian’s, Max’s Kansas City and Eric’s Bar (near Pratt; where Patti and Bob met).

Acquire, explore, experiment + create w/ video, audio, performance, life + new understandings.

Participate in the founding first year of The Kitchen; organize Wed. evening programming, 1971.

Teach Pratt Institute first Electronic Media Arts class (Am. Cyanamid studio), via Jacob Landau.

Video document Arts & Society series at the Art Students League, via Rudolph Baranik.

Collaborate with Peter Crown, PhD, physiological psychologist, on neuro-media interface works.

Collaborate with Eric Schwartz, PhD, on electrical stimulation of visual phosphene patterns.

Learning + influence of Art, Zen, McLuhan, Bucky, Cybernetics, Whole Earth, computer tech., Information Theory, systems, Ecology +, I begin thinking about the information environment as ecosystem, and about my creative path therein, under the title **“Environetic Synthesis”**, noted with a ‘blurb’ in Radical Software #2.

Conduct and record bio-signal (EEG + EMG) control of video and audio synthesis systems at the (C.T. Lui’s) Egg Store, with Frank Cavestani, Peter Crown and Randy Hasson (performer).

Participate in Automation House (brainwave music) events, with David Rosenboom.

Present new video works, along with Eric Siegel, at the Raindance loft.

Compose “Garden of Earthly Delights” tech-tape music for Multigravitational Dance Company, presented at Autumn Festival, FR.

Video/audio compositions “See Mudra Gulp” + “Feed Fields Back” presented as part of the first video show at the Whitney Museum, and at Pacific Film Archives, Berkeley, in 1971.

5. Santa Fe, 1972-73

Load Ford Econoline van with possessions and /photo/video/audio equipment and head west, back to the Bay Area, intending to collaborate with Stephen Beck at KQED/NCET.
Stop and stay in Santa Fe for nearly a year, instead.
Portapak document interviews with Bob-O the Clown + Eugenie Shonnard, with Ray Hemenez.
Initiate 'public access television' at the Santa Fe cable TV station.
Adobe + timber building construction (w/ Hal Migel), Tesuque, NM.

6. Bay Area, 1973-79 + 1982-85

Settle in Woodacre, in the San Geronimo Valley, Marin County, establishing the Quanset Studio.
Design family client residences, for construction by master-builder Harlan Floyd and crew.

Become an active participant in the extended Bay Area media-arts/performance/tech community.
Create a body of works over the next 12 years under the umbrella of the **Bio-Arts Lab**, 1974-85.

Present media/performance/installation "Random or Not" at the Sausalito Art Center.
Present media/performance/installation "Yeshayahu" at the College of Marin.

Begin playing at interspecies communications with access to researchers and marine mammals (orcas in BC w/ Paul Spong, dolphins at SF Aquarium, harbor seals w/ fireman Paul Paul-Bitsky and Thomas Poulter's (1934 Byrd Expedition polar recordings) Lab, at Stanford U. +).

Establish access to Koko the Gorilla, via Penny Patterson at Stanford U. (later in La Honda, CA) in exchange for video documentation, some produced for National Geographic and some recorded for personal creative use, plus design of future gorilla habitat, over 10 year friendship.

Experiment-produce holography with Lon Moore, Fred Unterseher + the School of Holography.

Initiate "NASA-Arts Project", with NASA Ames Research Center administrators and scientists, beginning with use of multi-channel bio-telemetry systems for sensing and extended feedback. Visits to NASA Ames were frequent, often coinciding with other Silicon Valley interactions.

Invited to join five other artists (Robert Fried, Robert Moon, Gerry Gooch, Gage Taylor, Bill Martin), to spend a month (July) in Baja, MX, to produce works for "Baja" exhibition at SFMoMA, supported by SECA, opening Dec. 1974; at Nancy Hoffman Gallery, NYC, 1975.
Create video, audio, photography, 360° holography ("Califa") and sculpture installation.

Marry Caroline Ede and spend month in England with new bride's family, meet w/ John Lifton + advise printing company on holographic publishing.

On recommendation of Christopher Bird, co-author of The Secret Life of Plants, move to San Francisco, as Henry Dakin offers work space and support to continue work at his Washington Research Center (including electronics lab with Faraday cage) in Pacific Heights.

Contracted to create interactive plant music/video for the feature film "The Secret Life of Plants" resulting in collaboration with John Lifton ("Green Music"), Jim Wiseman (Paik-Abe + Sandin video synthesizers), Tom Zahuranec (Tcherepnin audio synthesizer + six-channel plant GSR transducer) + my multi-channel bio-telemetry (EEG/EMG/) systems and performance designs. (Tom Z's project systems and archives donated to Mills College Music Department in 2010.)

Frequent creative use of Infrared video thermography systems (UTI/AGA/Aeroneutronic Ford) + collaborating with dancers (Margaret Fisher, Monica Suder, Judith Azur, Nancy Stark Smith +).

Continue NASA-Arts collaborations, working with closed life-support + space-suit systems + multispectral imaging groups + contractor L&M Electronics and Stanford Children's Hospital, bio-mechanics lab (kids w/ cerebral palsy). Interact with researchers at SRI (Hewitt Crane, Peter Schwartz, Jay Ogilvy), Xerox PARC (Alan Kay), Exploratorium (Frank Oppenheimer).

Invited participant on "Send/Receive" an East Coast – West Coast artists' telecommunication project, using the NASA-Canadian CTS (Communication Technology Satellite), with Liza Baer, Willoughby Sharp, Keith Sonnier, Sharon Grace, Carl Loeffler, Margaret Fisher +, 1977.

Invited collaborator on "Satellite Arts Project", organized by Mobile Image (Sherrie Rabinowitz + Kit Galloway), using the CTS, with support from CPB +, along with Jim Wiseman, David Rosenboom, Dancers' Workshop performers, Paul Horn +, 1977. Create "Bio-Arts" sequences.

Conduct thermodynamic imaging tests in the 40x80 wind tunnel at NASA Ames, integrating IR thermal imaging, Schlieren techniques and laser interferometry, w/ help from imaging contractor MetroLaser and support from Columbia Pictures, via Scott Bartlett (for special effects).

Conduct research, experiments and un-finished production of "Gravitational-Field-Day", with advocacy of Dr. Jesco von Puttkamer at NASA Headquarters, DC, participation of NASA-Ames, Johnson Space Center, Houston, and other facilities, taking selected dancer (Margaret Fisher), gymnast (Toby Towson) and high-diver (Greg Louganis) through gravitational simulation training (KC-135 parabolic flights, neutral buoyancy water tanks, centrifuge spinning at 3Gs, bed-rest +), and creation of video performances in these settings, to highlight the science of man in space. Begun in 1978, funded by NEA in 1979, halted by the Reagan Administration in 1981.

Showings/exhibitions, guest artist residencies + presenting opportunities. Participate in arts-sciences interactions at Exploratorium, play with emergent analogue-to-digital computing (Home Brew Club, Bill+Louise Etra, Community Memory, Lee Felsenstein, Paul Dimarinis, R. Shoup). Participate in workshops w/ Howard Kline (Rockefeller Fdn.) and Bay Area video creators to establish BAVC, and collaborate with Mills College new music + dance creatives.

Drawings published in book, Worlds Beyond: The Everlasting Frontier, New Dimensions Fdn. Works written about by Stephen Wilson, in Using Computers to Create Art, Prentice-Hall, and in Silicon Visions: The Future of Microcomputer Technologies, by Dan Shafer, The Waite Group. Color thermal images included in book, Computer Images, edited by Joseph Deken, published by Stewart, Tabouri & Chang, NYC, 1983. **"Bio-Dis-Plays"** page published in La Mamelle, 1976.

Take Springtime drive from the Bay Area through the Southwest with Jim Wiseman, stopping in Tucson, Puerto Penasco, White Sands, Santa Fe and Telluride, CO, to visit John Lifton + family, having recently moved from the UK. Decide to co-organize/host a next project in Telluride.

"Arts & Sciences: Telluride", in Sept. 1979, brought 20 invited artists/scientists together for a 10 day workshop and public presentations, high in the Colorado Rockies (video documented). It led to many subsequent projects and collaborations, including my decision to move to Telluride, to work with John Lifton on regional community master planning, our creative collaborations and my use of the slogan: Art & Defense: The Best Defense is a Cultural Offense.

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In 1982, I returned to spend most of the next three years in the Bay Area, finding a live/work barn-studio in Petaluma and to begin a new body of creative works. **"Information Revolutions (IR)",** would explore/present the dark side of our information ecosystem (privacy, surveillance, information warfare, terrorism), with cooperation/involvement of military research labs, defense contractors, intelligence agencies + (Pentagon, Army Nightvision Labs at Ft. Belvoir, Wright Patterson AFB, FLIR Systems, Inc., Defense Information Center, Honeywell, Mitsubishi, +).

In collaboration with Smith Kettlewell Visual Institute and San Francisco State U., work with blind performers/dancers wearing SonicGuide echolocation devices with modified external audio output, to navigate in complex environments (eucalyptus trees in Presideo Park).

Record aerobatic/media rehearsals at Jim+Judy Newman's home (squash court), via Ant Farm.

GRiD Systems donates three plasma display laptop PCs to interface with Speech Plus text-to-speech system, for "Information Revolutions (IR)" computer speech creation and performance.

"Information Revolutions (IR)" included photo + video imaging with sophisticated 'nightvision' and on-loan FLIR (forward-looking infrared) systems, computer speech and speech recognition systems, ultrasound echolocating blind performers, 'restricted' military information and newly leaked Pentagon 'friendly fire' video tapes.

A series of large canvas paintings (12'x 24') were produced as part of "Information Revolutions (IR)", including "Gorilla Communication", "Italian Nuclear Facilities" and "Terrorism".

As a result of meeting with Gary Starkweather, Alan Kay and others at Xerox PARC in the mid-1970s, I explored techniques for 'archival' digital printing in 1983-84, ultimately utilizing IRIS systems, as the then state of the art, to create a set of 'archival' digital prints from scanned slides.

Sharon Grace organized "Reel to Real", a project to upgrade and preserve most early ½" video artworks by Tom Marioni, Howard Fried, Paul Kos, Stephen Beck, Willie Walker, Skip Sweeney and myself, and to have them subsequently presented at SFMoMA, 1984.

Develop theater work "Ape Story", a contemporary Chinese opera, with a large children's chorus and a 'talking' gorilla as main character. Sequences prepared w/ musicians (Ehr-hu), children at Commodore Stockton School, the Chinese Cultural Center in San Francisco +. Not completed.

Bay Area architecture/design projects include work for Walker & Moody (on Castle Pines, CO), Sestak-Grega solar residence on Discovery Bay, and environmental design + education projects with Bonnie Sherk and The Farm, San Francisco.

7. Telluride, 1979-82 + 1984-96

Join John Lifton and small team, as project architect, to do contracted Master Planning of the Mountain Village, for the Telluride Company. First-phase planning was completed in 1982.

Return to the Bay Area p/t to develop new relationships, projects and opportunities, 1982-85.

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Upon return, work with John Lifton on numerous Telluride regional community planning and design projects from 1984-96, including land-use, biological wastewater treatment, renewable energy, mountain agriculture, transportation mitigation (public gondola), air quality, telecommunications, civic decision-making, cultural development, sustainable economics, and buildings.

Collaborate with John Lifton and wife, writer/painter Pamela Zoline on creative projects and on stewarding a healthy future for Telluride. Influenced by the 1979 Arts & Sciences project, on-the-ground community needs and abilities of initial Board members, the Telluride Institute was established in 1984, with Rita Robinson and I becoming initial co-program directors.

Telluride Institute programs eventually include annual Ideas Festival, Native American Writers, Composer to Composer, Mountain Garden, Watershed + InfoZone. www.telluridеinstitute.org

As the Telluride region was the site of the world's first long-distance transmission of AC power in 1891, I organized the 1991 Ideas Festival on "Energy: a Centenary Commemoration and a Discussion of Today's Energy Issues", along with production of an original three act play, "Energy: A Love Story", with original music (Phillip Bimstein's "Persian Love Song"), and Rumi recited in Farsi, presented at the Sheridan Opera House.

Around 1991, I took on directing/stewarding the **InfoZone**, a community networking initiative that we'd discussed for years, and began to realize using BBS technologies in the late 1980s.

With support from the Colorado Advanced Technology Institute (CATI) and Colorado Supernet, in 1992 the InfoZone became the world's first rural Internet PoP, and by 1995 hosted the first spread-spectrum wireless community WAN. IBM provided a RISC-6000 server and the Apple Library of Tomorrow program provided numerous public access computers, printers and more. The InfoZone, as online community, set many examples, with international recognition.

I attended the 1992 "Civic Networking" workshop at the Carnegie Institute, in DC.
To further the field, I organized the 1993 Telluride Institute Ideas Festival "Tele-Community", an 'open space' meeting with over 20 invited expert presenters, an audience of 200 at Telluride's Sheridan Opera House, and online participation via the WELL.

After Telluride, annual conferences on Community Networking were held in Cupertino, CA (at Apple) and in Taos (La Plaza), where the Association for Community Networking was formed.

Served on the Board of the CATI Rural Telecommunications Program, with annual conference at the Aspen Institute, eventually transitioning to be on the still active Rural Telecom. Congress. Present at CPSR (Computer Professionals for Social Responsibility) DIAC conferences.

InfoZone received the first NEA-Benton Foundation "Arts-Online" grant, + was lead participant on NTIA funded "Maps for People" project. With U.S. EDA funding, and help from 'Zoner, Lee Taylor, we web published "The Applied Rural Telecommunications Investment Guide", in 1995.

Stewarded community processes and publication of "REACH for Health" book and web site, funded by the Colorado Trust and National Civic League's Healthy Communities Initiative.

Awarded Colorado Council on the Arts, CoVisions + NEA-Helena Presents, Regional Initiatives - New Forms grant, for "Tele-Comm-Unity", a pioneering western states Internet-arts project.

Receive Telluride Institute Visionary Award for 1994-95.

The InfoZone provided early online support/presence for all other Telluride Institute programs. The 1995 Composer to Composer program, brought together Mort Subotnick + Joan LaBarbara, Electronic Café, David Rosenboom, David Dunn, Vasulkas, Dawn Stopiello + Mark Coniglio +, for workshops and presentations on networked electronic music and image composition.

Dale Lehman, PhD., an environmental/telecommunications economist teaching at Ft. Lewis College in Durango for a few years, became a friend/colleague in thinking/writing about what I called **"Info/Eco"** (exploring the relationship between ecology, information and economics).

The Telluride Institute was a 'magnet', attracting remarkable people and ideas to this isolated mountain town, integrated with all the other attractions of the place. Our motivations including treading lightly, as we pragmatically worked at ecologically creative community-building.

Press about the InfoZone generated international interest and I was invited to present/advise on rural Internetworking strategies in Japan, the Austrian Tyrolean Alps (Kals), Spanish Balearic Islands (ParcBIT planning, Majorca) +. The Storefront for Art & Architecture in NYC awarded me an EcoTech Residency in Corsica, to help and advise on Internet development.

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During many productive years in Telluride, with occasional return to the Bay Area, elsewhere in the U.S. or internationally, personal creative works continued to develop and take on life.

Beginning in 1984, with purchase of a Litton, Gen.2+ Nightvision system, I photographically explored and captured images in the dark: wildlife, nightlife, sleeping people, movie audiences and spies. These "Illicit Images" prints became a major part of "Information Revolutions (IR)".

ArtWeek had “Illicit Image” cover image + review of LACE “Surveillance” show, Mar. 28,1987. Awarded photography residency to print “Illicit Images”, at Light Work, Syracuse, NY, 1991. “Illicit Images” photos + texts featured in Ten-8 (UK) "Digital Dialogues", Vol. 2, #2, Fall 1991, and in CTRL [SPACE]: Rhetorics of Surveillance; ZKM / MIT Press; Levin/Weibel, eds; 2002.

“Information Revolutions (IR)” was first installed/exhibited at San Jose CCA/CADRE in 1985, and two-evening media/performances of “IR – Thermal Echoes” were successfully presented and video recorded at Video Free America, soon after. A $10,000 grant was awarded by Art Matters.

Roy Ascott, contacted me with invitation to install “Information Revolutions (IR)” at the 1986 Venice Biennale, as a featured part of “Informatique”. My use of ‘restricted’ NATO military technologies posed difficulties with customs in Italy, and the installation’s content, describing and mapping all communications infrastructure supporting nuclear weapons facilities in Italy, caused a stir. Soon after opening week and my departure, “Information Revolutions (IR)” was shut down (censored) without notice.

In 1991, during the first Gulf War, the Pentagon, following prior contact, leaked/sent me three raw FLIR video tapes documenting incidents of ‘friendly fire’. Realizing what these were, I copied and sent them to a producer/friend at ABC News. They were aired on all networks that evening. I created a video work integrating the incidents with my own FLIR + computer speech compositions, titled “Friendly F(IR)e”, premiered during the 1992 Telluride Film Festival.

From 1987 through 1992, “Information Revolutions (IR)” works were presented at LACE, Los Angeles; Center for Contemporary Art, Sacramento, CA; List Visual Arts Center, MIT; Center for Contemporary Art, Santa Fe; Kunstmuseum, Dusseldorf; Ars Electronica, Linz, + .

Create **RADLab** virtual personal projects studio and web site in 1994-ongoing. www.radlab.com

8. Davis, CA, 1996-2006

The need to care for elderly parents in declining health, interceded with my life’s path in 1996, resulting in a fairly abrupt move from Telluride, CO to Davis, CA that Fall.

The newly instituted **Davis Community Network (DCN)** had coincidentally and fortunately offered me a position as its first Executive Director. I quickly settled in Davis and got to work, eventually moving parents out of their home in Healdsburg, to assisted living facilities nearby.

DCN, its Board, the regional community and I were a good fit, and I was almost immediately able to follow through and a secure one of four CPB grants “to demonstrate use of the Internet for improved civic decision-making and action”. “WaterWorks” DCN’s focused project, was developed over four years with additional funding/assistance from Yolo County, the Esri Conservation Technology Program, Army Corps Hydrological Engineering Center, USGS National Spatial Data Infrastructure Initiative, UC Davis +. DCN and its public/private partners, successfully demonstrated ways the ‘net could improve quality of lives and livelihoods.

Exploring opportunities at UC Davis, I soon found myself occasionally substituting for Media Arts classes of Lynn Hershman, as she, a long time friend, was busy on her feature film works. This evolved to helping shape (w/ Willard Uncapher) and then teach, via Doug Kahn and Jessie Drew, in the new Technoculture Studies Program.

Concurrently, Gary Snyder + David Robinson's Nature and Culture program established an Artist in Bioregional Residence (Cache-Putah Bioregion), of which I became one, producing a series (24) of original photo-collage prints, + limited addition IRIS digital prints.

Selected and awarded funding by the City of Davis to create a public artwork in Arroyo Park, I 'secretly' created a large crash-landed flying saucer, permanently banked into the earth, as a now designated "ETIP" (ExtraTerrestrial Impact Preserve).

In 2002, following reactionary U.S. intelligence agencies' responses to 9/11, I created a web site, registered as: www.nationalsecuritytesting.info . The home page contained a long run-on list of key-words, names and acronyms that might trigger NSA or other intelligence agency monitoring. A second hidden page, recorded and listed IP addresses of all computers logging on to the site. After its second day online, the web site and domain were taken off-line by unknown sources. The hidden log showed that nearly 20 unidentified computers browsed the site, plus one personal address: @poindexter.com (Admiral Poindexter, of the Total Information Awareness Program).

Via an introduction by Hal Varian, Economics Professor at UC Berkeley (later Chief Economist, Google), I was invited to a two-day "Digital Economy" conference at the Dep't of Commerce, in DC, and was there invited to be on a committee at the National Research Council, studying and preparing the book Broadband: Bringing Home the Bits, on 'first mile' development of the 'net.

I served as invited advisor: California Smart Communities Project, Sacramento Regional Smart Growth Initiative, CENIC network, and California and Colorado State Arts Councils,

"Smart Growth & Smart Communities: Smart About What", published in Regional Futures, Capital Region Institute and Valley Vision/Regional Action Partnership (Sacramento), 2001.
"Slow Tech", article published in the Community Media Review, No. 4, Winter 2005-06.

I was invited to Japan in prior years by NTT Data and by the Open University in Kyoto. In Fall 2001 was invited to participate in and delivered the keynote address on "Tele-Community Development" at the International Forum on Townscape Design, in Fukuoka.

This was immediately followed by participation in the Global Community Networks Congress and WSIS (World Summit on the Information Society) planning meeting in Buenos Aires.

Received Leonardo DaVinci Space Art Award, from National Space Society, Carnegie Mellon U. and Zero Gravity Arts Consortium, for 25 years of NASA-Arts collaborations, in 2006.

DCN is one of the few early Community Networks continuing to actively serve its community. It plays an active role as Davis is now preparing a FTTP Gig. network for all. I continue to serve on DCN's Board (ex officio), and still use DCN/Omsoft Internet services, from Santa Fe.

9. Santa Fe, 2006-

After ten years in Davis, with parents deceased, now age 60, I sought to relocate one more time, seeking a place with access to 'the wild', a place where I might be able to work on next-phase networking initiatives (rural broadband), and a place with a vital cultural community. A few months in 2005 in British Columbia were wonderful, but it was not the place. Neither was Telluride any more, but Santa Fe seemed an ideal base answering the three requirements. I also had a few close friends in the Santa Fe area (The Vasulkas, Gene Youngblood, David Dunn +).

Soon after arriving on July 4, 2006, temporarily living in Ruth Zaporah's rental casita, I attended the Santa Fe Design Festival, which included a tele-connection with Hazel Henderson from Florida. It did not work. New acquaintances urged me to 'get to work' on bringing better broadband to New Mexico, which I had begun advocating for.

That Fall, I started the **1st-Mile Institute**, creating a web site + email list (hosted by DCN), and began a multi-year effort to understand New Mexico's telecom landscape, players, impediments, opportunities +. New concepts of 'open fiber' networking, rural demand aggregation, equitable access, new technologies and economics and the next ten years of networked society development, were at the core of 1st-Mile Institute's 'Broadband for All' Initiative. www.1st-mile.org

The Institute received two annual start-up/outreach grants from the McCune Charitable Trust.

Soon thereafter, community networking colleague, Andrew Cohill, PhD., former lead of the Blacksburg Electronic Village (VA), now head of broadband consulting firm, Design Nine, Inc., contacted me, asking if I'd like to join him. I did for the next five years, as Senior Broadband Planner, working on municipal and regional projects across the country, including the Memphis, TN (3 states/15 counties) region, Kansas City, MO, three western South Carolina counties, rural Pennsylvania, Eagan, MN, Cortez, CO; Eastern Idaho and Santa Fe, NM.

With my advocacy and lead, Design Nine was contracted to prepare the New Mexico "Integrated Strategic Broadband Initiative" report/plan for Governor Richardson's Office in 2008, via Science Advisor, Thomas Bowles, PhD. I was then contracted by NM DoIT to steward and coordinate statewide broadband stimulus proposals over two years, resulting in approximately $183,000,000 in NTIA + RUS awards for NM communities, providers, tribes, .orgs + the State.

In partnership with the State Library, 1st-Mile Institute was awarded the first ARRA–NTIA BTOP Sustainable Broadband Adoption grant ($1.5 M) in late 2010. Upon award, the State excluded the Institute from the partnership.

Publish "The Ecology of Community Networking" in Green Fire Times, and in the Community Informatics Review. Present at annual Rural Telecom Congress/Broadband Communities Conf.

"Telluride InfoZone: The Art of Tele-Community Development", my chapter published in Social Media Archeology and Poetics, Judy Malloy, Ed., Leonardo Books, MIT Press, 2016.

Advise on (+ name) Canadian First Nations' "First Mile Connectivity Consortium.

1st-Mile Institute, with the Internet Society (ISOC) and partners, co-organized and hosted the (Americas) "Indigenous Connectivity Summit", held in Santa Fe, Nov. 6-9, 2017.

The Institute is preparing a "New Mexico Tribal Broadband Report", to be available Spring '18.

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I served on the Board of Santa Fe Complex, a short lived but inspiring arts/sciences/tech .org. and on the Santa Fe Railyard Arts Committee. Since 2010, on the Board of Parallel Studios, organizational steward of the annual CURRENTS: Santa Fe International New Media Festival.

Awarded New Mexico Arts, Public Art Grant, for "Ground Truth", eco-sensing project, 2007.

1st-Mile Institute's SARC (Scientists/Artists Research Collaborations) was successfully piloted in 2012 as a featured part of ISEA2012, via Andrea Polli, with an artists in Labs initiative with participating science institutions and supporters: New Mexico Consortium, Los Alamos and Sandia National Laboratories, Lockheed Martin, University of New Mexico and Santa Fe Institute, which hosted a special two-day Working Group on arts/sciences collaborations.

ISEA2012 publishes essay: "Info/Eco: Economics/Information/Ecology", a call to arts. Co-authored, w/ Jack Ox, an 'arts/sciences' editorial in the Jan. 2013 issue of Leonardo Journal.

While developing its regional cultural and educational initiatives, SARC is actively participating in networked national and global interactions. 1st-Mile Institute/SARC was a co-sponsor of UNM's NIH funded "Art of Systems Biology and Nanoscience" program in Santa Fe, 2013.

I helped name and SARC is featured in "Steps to an Ecology of Networked Knowledge and Innovation: Enabling New Forms of Collaboration among Sciences, Engineering, Arts, and Design", a Leonardo / MIT Press Ebook, 2015.

I was an invited participant at a special NSF funded, SEAD (Science, Engineering, Arts and Design) program, with NEA, NIH, DARPA, NASA, other federal agencies and White House officials, May 16, 2013 at the Smithsonian Institution, DC.

Invited SARC presentation was given at the XVIII ISA World Congress of Sociology, 'Facing an Unequal World: Challenges for Global Society', session on 'Fostering Trans-Disciplinarity Amongst the Social and Natural Sciences, Engineering, Arts and Design', July 2014, in Yokohama, Japan, and at Balance/Unbalance, held at ASU, Tempe, AZ, in late March, 2015.

SARC co-produced, with Cabine Voltaire (Daniela De Paulis, Rotterdam, NL), an online Google Hangout series on Astro-Arts/Sciences, beginning with the International Space Arts Workshop (ISAW4) held at the NASA Ames Research Center and the SETI Institute, Mountain View, CA, in May + July, 2013. Additional Hangout programs: "The Surface of Mars", "Small Sats", "Pioneers of Wireless" and "MoonBounce".

SARC has produced 'Media Arts/Sciences' programs/presentations/workshops in partnership w/ the CURRENTS: International New Media Festival, annually since 2012.
SARC hosted "New (+ Old) Media: Restoration, Preservation, Archiving & Access", workshops + symposia as part of CURRENTS 2015 + 2016, with support from the Thoma Foundation.

The SARC "ECOS" initiative is being structured with intent to creatively address local-global "Grand Challenge" issues of climate, energy, economics, humanity and the ecology of the information environment. Current projects include:

"The Energy & Information Ecosystems of the Colorado Plateau: An Arts/Sciences Field Study", (featured article published in the first issue of Mapping Meaning, May 2018) +

"Eco-Value Scale" a work-in-progress, intended as a large-scale public media/sculpture, demonstrating ecological-economic value relationships, proposed to be physically located at an international financial center, and to be an online arts/education program.

Present early arts/sciences works (NASA-Arts Projects) and current SARC ECOS projects at the Santa Fe LASER on June 8, 2018.

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A number of arts and eco-cultural projects are ongoing, recently done, now active or proposed.

Since the 1980s, I have kept a log of individuals (who should know better) mis-pronouncing the word 'nuclear' as 'nucular'. "What is Nucular" is a long list naming-names and key positions.

I have always, and continue to create drawings, diagrams, photographs, writings and assemblage artworks. "Out of Order" assemblages are a large, still growing body of works, each telling a story about the 'nature of information'. They look like they should work, but they don't.

"Latexts" are a series of latex rubber text-relief artworks created since the '90s.

"In-Terror-Nation", FLIR video-still portraits of immigrants accompanied by a computer speech interrogation, created for an Immigration/Migration Residency at Santa Fe Art Institute, 2016.

"Illicit Images: At the Movies", 60 photo/digital prints (taken 1985 – 1995 at the Opera House + Film Festival in Telluride), exhibited at the Ah Haa Gallery, Telluride, for Film Festival 2016.

"Eugenie" is a Portapak video recorded in 1972, of then 86 year old artist Eugenie Shonnard, talking + laughing about Dinah the Gorilla and her life with animals. Digitized + edited in 2017.

Since 2013 have assisted pioneering media artists/friends, Steina and Woody Vasulka, on the Vasulka Archives to be housed at CU Boulder, and at the Vasulka Chamber (opened in 2014), National Gallery of Iceland, Reykjavik. Arrange international exhibitions (Henry Gallery, Seattle; Ravens Row, London, Phil Space, Santa Fe +) and publications preparation.

Facilitated the donation of Jim Wiseman's Paik-Abe video synthesizer and Sandin image processor, to the School of the Art Institute of Chicago, along with Jim's original videotapes going to the Video Data Bank.

Working with G. Wyndham Hannaway, in Boulder, CO, on digitization of my early video tapes.

"Sawari" is a proposed photonic, laser-interferometry sensing + communication arts installation.

"EM Spectrum" is a proposed 10 Act theater-work, exploring the ElectroMagnetic spectrum and our EMotional spectrum (recreating Marilyn Monroe and Marlon Brando at the Actors Studio).

Live with Mai Ting, MD, on her small organic Paradox Farm in Jacona, Santa Fe County, NM, a place with very poor network services access. Build 12' x 36' work studio at the end of 2016.

www.richardlowenberg.com developed and activated in early 2018.