information from website http://www.greenmuseum.org/c/ecovention/sect1.html

I'm very subversive, and that is why it's so important to eventually build the projects.— Patricia Johanson[1]

getting it built

Coined in 1999, the term ecovention (ecology + invention) describes an artist-initiated project that employs an inventive strategy to physically transform a local ecology. Ecovention, the exhibition, focuses on realized ecoventions, because artists' proposals, or "visionary fantasies," rarely change public attitudes the way novel experiences do. While Ecovention and its catalog cannot simulate such experiences, participants hope that a greater awareness of these projects will encourage viewers to visit these sites and invite artists to propose ecoventions for their communities. Of course, artists don't produce their projects on their own. They collaborate with community members and local specialists such as architects, botanists, zoologists, ecologists, engineers, landscape architects, and urban planners to realize and evaluate their scientifically complex projects.

Local citizens' role as stakeholders is of paramount importance to an ecovention's survivability, since citizens are the stewards who will protect and maintain the ecovention once it's built. Of course, there are numerous fascinating stories about citizens or specialists who initially doubted the feasibility of a particular ecovention and underwent a 180-degree turn to become its biggest advocates. These are the stories this catalog discloses. So if you too have your doubts, you may be in for some surprises!

Patricia Johanson, Fair Park Lagoon ("Saggitaria Platyphylla")

There is the pesky question of why an ecovention is art and not just some aesthetically pleasing reclamation project. Co-curator Amy Lipton and I spent a lot of time discussing the "artfulness" of each project presented here. Before deciding whether to include a project in the book, we applied the same standards that we would use to judge the success of an ordinary work of art. This is why the standard of inventiveness matters. In Plato's Symposium, the subversive Diotima argues with Socrates about the significance of divine beauty, which entails imagination and brings forth not beautiful images, but new realities, which are presumably original or inventive. Diotima actually describes creators, such as poets and artists, who seek wisdom and virtue as deserving of the name inventor.

But, what if man had eyes to see... divine beauty... not clogged with the pollutions of mortality and all the colours and vanities of human life... Remember how in that communion only, beholding beauty with the eye of the mind, he will be enabled to bring forth, not images of beauty, but realities... and bringing forth and nourishing true virtue to become the friend of God and be immortal, if mortal man may. Would that be an ignoble life?4

In this book and exhibition, the standard of inventiveness isn't only applied in relationship to art history, but in terms of current ecological practices in the public sphere. In the case of ecoventions, artists either employ or invent novel techniques that have yet to be tested in such instances. This requires them to convince communities and specialists to support their local experiments.

Helen and Newton Harrison (bolded names indicate the first time an artist's work or idea is referenced in this section), two of the best known eco-artists, have stressed the significance of invention. Not only do they publicly articulate the inventive aspects of each of their projects, but they believe that every artist's role is:

to search, to discover value, to value discovery, to discover qualities of value...to bespeak those values, to be self-critical...to re-speak the values more clearly, to be self-critical again. From this process, new metaphors emerge and old ones are tested for value.5

As scientific experiments carried out in the context of the art world, ecoventions are able to withstand a higher level of risk than typical scientific experiments. Such experiments usually cost less as works of art and garner broad support as community-building public projects, a feature that gives ecoventions a distinct advantage over pure science. Furthermore, their success isn't judged by the artist's

ultimate ability to publish the results or pay back sponsors like the National Science Foundation, as would be the case for scientists. Mel Chin's Revival Field (1990-1993), perhaps the best known ecovention, began as an incredibly inexpensive experiment that a United States Department of Agriculture (USDA) scientist couldn't get funded. When it comes to art, sponsors don't weigh practical priorities or expect to make a profit, the way funders of scientific research do. Art is viewed as a positive contribution that makes a long-term restoration project immediately attractive to a wider audience. In the symposium that accompanied The Natural Order at Texas Tech's Landmark Gallery, artist Lynne Hull remarked:

I would also like to suggest that ecological art will often differ from ecological restoration science in its process rather than its intent. As I said, the scientist has to go through this scientific method, which can narrow perspective, and therefore he or she can lose track of the larger picture. The artist, on the other hand, is encouraged to be wide-ranging and open to all possibilities. The artist Mierle Laderman Ukeles suggests that once an artist gets involved in science or some other kind of technological process, the artist can question and re-define anything at any step, and the scientist won't do that.6

While art/science collaborations offer certain advantages over pure science, not all artists consider artists' attempts to tackle ecological problems a positive trend. On a panel discussion in conjunction with the Seattle Art Museum's 1979 exhibition "Earthworks: Land Reclamation as Sculpture," Robert Morris remarked that he found it bizarre that:

art was going to cost less than restoring the site to its 'natural condition.' What are the implications of that kind of thinking...that art should be cheaper than nature? Or that siteworks can be supported and seen as relevant by a community only if they fulfill a kind of sanitation service.7

Only the year before, Alan Sonfist created Natural and Bronze Time Enclosures (1978) which paired a bronze branch, valued at $4, with a real tree branch, valued at $4,000, and required them to be purchased together, to demonstrate nature's intrinsic value over art. To be fair, this exploration of ecoventions doesn't aim to support the view that industry is free to pollute, since artists are relatively cheap and eager to clean up after polluters. Rather, this book introduces case-studies to elucidate the variety of approaches and range of innovations that artists are currently implementing in conjunction with their scientific and community collaborators. The following case studies illustrate an intentional and an accidental ecovention. Both began as unpredictable experiments.

Mel Chin (with Dr. Rufus Chaney), Revival Field

Immersed in a period of free-ranging research during the late 1980s, artist Mel Chin came upon an article about the use of plants as remediation tools and immediately considered such a process as a sculptural tool capable of bringing into reality the return of life to devastated landscape. Determining which hyperaccumulators — plants that have evolved the capacity to selectively absorb and contain large amounts of metal or minerals in their vascular structure — worked best was quite another issue. Not content to stop, he fortunately found Dr. Rufus Chaney, a USDA senior research scientist, who had proposed phytoremediation (using plants as remediation agents) as early as 1983, but never implemented a field test. The rest is both ecological and art history. While Chaney was inspired by the possibility to test this biotechnology, Chin found himself in a battle with the National Endowment for the Arts (NEA), which originally agreed to award the project a grant, but reneged when the chairman deemed it more of a science project than a work of art, even though it was being created in conjunction with the Walker Art Center, Minneapolis, Minnesota.

Fortunately, Chin met with NEA Chairman John Frohnmayer to articulate the project's artistic merits and its historic possibility in the history of conceptual art, and the grant was restored. Chin has compared the plants' absorption of toxic metals to the art of carving. Furthermore, once the toxin-laden weeds are harvested, incinerated and resold as ore (to pay for the process), the "aesthetic" is revealed in the return of growth to the revitalized soil.8 It's amazing to consider how much a $10,000 NEA grant inspired. Although Chin expresses his doubts about the sophistication and effectiveness of most current phytoremediation techniques, one business analyst predicts that the new phytoremediation industry will become a $400 million business by 2005.9

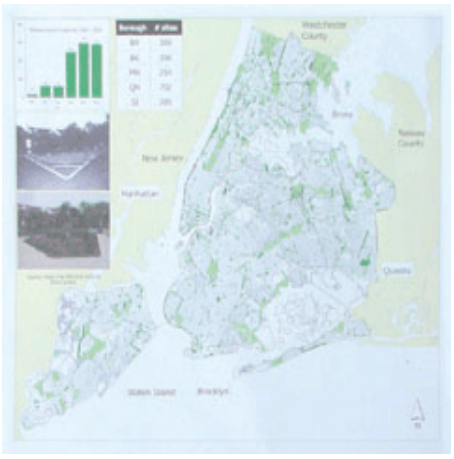
In June 1991, after six months of negotiations for sites all over the country, Chin and Chaney chose Pig's Eye Landfill in Saint Paul, Minnesota. They then planted Revival Field, the first such on-site experiment in the United States and one of only two in the world. Dr. Chaney selected one cadmium and one zinc hyperaccumulator (Thlapsi caerulescens) and two other known indicators of metals (Silene cucubalus and hybrid Zea mays). "Merlin red fescue and romaine lettuce were also included to test for metal tolerance and food chain influence."11 From the 96 plots designed to assess different soil and pH treatments, they discovered that Thlapsi samples absorbed the most zinc and cadmium. The results provided data essential to confirm laboratory tests and create a new technology.

Concerned that environmental factions such as the Green Party in Germany had begun to doubt the validity of the science due to the confidential (private industry and government) research initiatives in the U.S. that limited information, Chin returned in 2001 to initiate the tenth anniversary planting of Revival Field. Working with Dr. Chaney and other parties involved in the research, Chin successfully negotiated a transfer of new varieties of "super"accumulating plants to another collaborator, Dr. Volker Römheld. Chin and Römheld projected long term tests to further the science in Germany and to work on public lands, as well as in the Hohenheim University plots. With the first year's progressive tests over in 2001, the field will be replanted in 2002.

A founding father of the native plant revolution, Alan Sonfist first publicly articulated the need for urban forests in 1969, but it took another nine years for Time Landscape, a 45 feet x 200 feet patch of pre-Colonial wilderness (oaks, hickories, junipers, maples, and sassafras) planted in Manhattan, to get off the ground. Time Landscape has evolved into an ecovention, but it began as a monument to celebrate a less familiar, non-human history. According to Eleanor Heartney:
Sonfist's success in persuading city planners and bureaucrats to approve the construction of time landscapes is based on arguments that derive, not from conventional justifications for public art, but from the discussion that surrounds issues of architectural preservation. Sonfist's stance has been that it is as important to preserve historical landscapes as to preserve historical buildings.12

Sonfist believes that it is not enough to repair the landscape: one must also "repair the hole in the psyche which is left when all traces of our biological and ecological roots are obliterated."13 Since Sonfist's Time Landscape remains a visible but locked park, Time Landscape fails to offer a "social site filled with human content," though it does satisfy Jeff Kelley's condition that "places are where time takes root."14 Paradoxically, nay-sayers thought the plants Sonfist selected would never grow, let alone survive a contemporary metropolis, yet now his pre-Colonial list has joined the city's approved plant list. Time Landscape has transformed the local environment in ways that Sonfist could never have anticipated.

Alan Sonfist's 1965 plan for mini-landscapes juxtaposed against City of New York Parks & Recreation's Greenstreets Map Alan Sonfist's 1965 plan for mini-landscapes juxtaposed against City of New York Parks & Recreation's Greenstreets Map, 2002



Unfortunately, the New York City Parks Department, which has owned Time Landscape since 1989, has neglected to monitor its ecological benefits, which include absorbing rainwater, releasing oxygen, and absorbing pollutants such as airborne metals and carbon dioxide, due to emissions from cars zipping along the busy Houston Street artery, which links the Hudson River Parkway to the West Side Highway. In conjunction with the New York City Department of Transportation, the Parks Department has transformed hundreds of unused landmasses in streets into mini-landscapes, known as Greenstreets, which coincidentally affirms Sonfist's original proposal to place mini-landscapes in lower Manhattan.

Case Study Alan Sonfist, Time Landscape: Greenwich Village

1. Both the Metropolitan Museum of Art, New York City (1969) and Finch College Museum (1970) renege on their commitment to sponsor *Time Landscape.*
2. Planning board of Greenwich Village finds out about it and offers Sonfist a site.
3. Sonfist is required to secure insurance and community approval.
4. Department of Highways, the supervising agency, shows resistance.
5. Sonfist conducts research in the New York Public Library to discover indigenous plant species (oak, sassafras, wild rose, red cedar, gray birch, hickory and wild grass), none of which were available in city nurseries. They had to be scavenged from New York forests.
6. In 1978, Sonfist gains the contract to the land and begins planting.
7. Several species identified as native plants are not on the Parks Department list of trees approved for planting on city streets.
8. City officials insist that the forest be surrounded by a fence for insurance purposes, which ultimately aids the park's preservation.[15]

land art, earthworks, environmental art, ecological art, ecoventions...

It should be stressed that there are several different categories for art that involves nature— land art, Earthworks, environmental art, and ecological art. Where does an ecovention fit within these different categories? An ecovention is the most particular case, since it is designed with some intended ecological function. Though like all art, many ecoventions take on a life of their own to become something unanticipated. In fact, ecoventions fit into each of these categories. Land art, the most general category, encompasses any work that activates the land, however temporarily. Earthworks, ecological art and environmental art are all examples of land art, as are Dennis Oppenheim's and Ana Mendieta's interventions, most works by Chris Drury and Andy Goldsworthy, and the nature walks of Richard Long and Hamish Fulton.

Herbert Bayer, grass mound

Earthworks, an art historical category, was devised to describe works like Robert Wilson's Poles (1967-1968), Michael Heizer's Double Negative (1969-1970), Robert Smithson's Spiral Jetty (1970), Walter de Maria's Lightning Field (1974-1977), and many of the works installed at Artpark in Lewiston, New York. Earthworks are primarily permanent, large-scale, non-natural forms sited in "wide open spaces," as opposed to particular natural environments, such as along a river, amidst a field, or in an urban setting. As the Center for Land Use Interpretation's Formations of Erasure: Earthworks and Entropy (2001) exploration of the current status of Earthworks dem-

onstrates, several Earthworks have become victims of neglect, vandalism and degradation, not unlike the abandoned industrial sites that dot the landscape. As Roberta Smith noted "most are returning inexorably to the earth whence they came, despite the unchanging nature of the widely reproduced photographs by which nearly everyone knows them."17

Agnes Denes, Rice/Tree/Burial "ricefield," Agnes Denes Rice/Tree/Burial "red rice" detail

Environmental art, like Meg Webster's works or Agnes Denes' ritualistic endeavor Rice/Tree/Burial (1977-1979) (a second version of Denes' 1968 performance), is generally less monumental and tends to employ nature as a medium, so as to enhance the viewer's awareness of nature's forces, processes and phenomena, or to demonstrate an indigenous culture's awareness of nature's sway. Denes' rice field, meant to explore the life cycle's process of regeneration, evolved into an ecological work, when her planting of ordinary Louisiana white rice seeds eventually produced rice resembling a variety of Chinese red rice that's technically impossible to grow in New York. This led her to detect nearby Love Canal's long-term impact on the toxicity of Artpark's soil. Smithson's Spiral Jetty, a breakwater that forms a lagoon, might now be considered an ecovention, given its function and placement near a disused oil-drilling operation. The artist expressed an interest in "the origin of life as well as the devastating forces of entropy and the irreversibility of the loss of energy."18 However, the environmental hazards associated with the sculpture make it an unlikely precursor for ecological art.

One of Smithson's last proposals, which entailed reclaiming a strip mine, enabled him to mediate "between ecology and industry by reclaiming the land in terms of art,"19 and might have been one of the first ecological works – if not an ecovention – had it been built. Certainly, his Spiral Hill/Broken Circle (1971), a reclaimed open sand pit in Emmen, Holland, stands as an early example of eco-art. As the section "Valuing Anew" will demonstrate, Smithson, like Morris, thought artists shouldn't clean up or decorate industry's messes, so his notion of reclamation meant re-evaluating a site's ugliness or appreciating its problematic condition for what it is. Ecological artists consider issues of sustainability, adaptability, interdependence, renewable resources, and biodiversity, but they don't necessarily attempt to transform the local ecology. Not all ecological artists employ inventive strategies, nor do they necessarily aim to restore natural resources, stabilize local environments, value anew, or alert people to potentially confrontational conditions, which is why not all eco-artists create ecoventions. Even artists who actually make ecoventions create other kinds of art, too.

Given the variety of artists who have worked in this fashion since the late 1950s, it is truly amazing that so many built projects remain so invisible. Unlike a typical work of art that can move from one community to another, or is part of a body of work that can be discussed as a whole, most of these projects have impacted local communities in rather particular ways and therefore have remained local. Of course, all of the artists cited have participated in gallery and museum exhibitions, and some have catalogs and articles to support their work, but the majority of their projects are still little known among the art world cognoscenti.

The fact that so many ecoventions have either been folded into public works (sewage and waste-water treatment plants, public gardens, public landfills) or have been initiated by artists locally (brownfields, surface mines) further contributes to their invisibility. Finally, the difficulty of exhibiting, let alone explicating, ecoventions indoors, coupled with their resistance to collecting, has minimized a need to discuss them in mainstream art magazines and books. Even the recent monograph Transplant presented primarily indoor examples, despite the reality that plants typically reside outdoors. Baile Oakes' indispensible Sculpting with the Environment, featuring thirty-three artists' descriptions of their practice, is the single book devoted to working with nature outdoors.

The Nation's architecture critic Jane Holtz Kay similarly laments the absence of any discussion of buildings' environmental aspects in key journals such as Architecture and Architectural Record, despite International Design magazine's recent recognition of eighteen

architects for their ecological designs and the American Institute of Architects' (AIA) granting of 2001 Honor Award to the 48-story Condé Nast Building (4 Times Square), designed by Fox and Fowle, for its "elements of new thinking and constructing."20 She comments further that an article dedicated to the use of materials in Boston Architecture failed to discuss the materials' sustainability. And Architectural Record's "Material Affairs" interview with Tod Williams and Billie Tsien, architects of the American Craft Museum on 53rd Street, acclaimed by some critics as New York City's most important building since Frank Lloyd Wright's Guggenheim Museum, failed to discuss the building materials' ecological content or impact.

According to Holtz Kay, only Landscape Architecture has addressed ecological concerns, leaving the "would-be earth guardians isolated, only a whit more powerful than [they were] in less ecological times."21 On the other hand, Patricia Johanson argues that, unlike ordinary art that depends on a body of art history or critical interpretation, an ecovention can be grasped directly — whatever one thinks about it is valid.22 Well it's really not that simple, because the question "Why is it art and not science?" or "not a public garden?" or "not a sewage treatment plant?" still remains. By contrast, one wouldn't enter a green building and doubt whether it's architecture, though one might wonder whether it's finished, as many do with the "earthships" of Taos-based architect Michael Reynold.

Image of an Earthship's interior

Certainly, art historical figures like Joseph Beuys, Mel Chin, Agnes Denes, Helen and Newton Harrison, Ocean Earth, Robert Smithson, Alan Sonfist, and Mierle Laderman Ukeles are known and collected, yet too few in the art world realize the role ecoventions have played in convincing local city planners, landscape architects, civil engineers, and watershed managers to rethink their practices. When one considers the number of projects that some of these artists have realized, it's truly alarming that none has had an exhibition that specifically focuses on their realized projects. There have been several important group exhibitions, such as "Earth Art" (1969) at Cornell University, "Elements of Art: Earth, Air and Fire" (1971) at Boston's Museum of Fine Arts, "Earthworks: Land Reclamation as Sculpture" (1979) at the Seattle Art Museum, and "Fragile Ecologies" (1992), curated by Barbara Matilsky. the first exhibition to focus exclusively on ecological art, at the Queens Museum of Art. However, the Seattle Art Museum exhibition, initiated by the King County Arts Commission and the Department of Public Works of Washington, which presented proposals for sites slated for reclamation (gravel pits, flood-control sites, surface mines, and landfills) by Iain Baxter, Herbert Bayer, Richard Fleischner, Lawrence Hanson, Mary Miss, Robert Morris, Dennis Oppenheim, and Beverly Pepper, did lead to the realization of proposals by Morris and Bayer.

Rather than provide a definitive summary of every artist-initiated ecological project to date, Ecovention seeks to open a door onto this field and to introduce many of the active participants. Rather than focus on historical works, Ecovention seeks to expose the large number of ecoventions that have just been completed or will come to fruition within the year. It is hoped that other institutions will build on the research that went into Ecovention, just as Ecovention has benefited from what came before. For explanatory ease, ecoventions have been sub-divided into five categories: 1) activism to publicize ecological issues/monitoring ecological problems, 2) valuing anew/living with brownfields, 3) biodiversity/accommodating species/studying species depletion, 4) urban infrastructure /environmental justice, and 5) reclamation and restoration aesthetics. Of course, these categories are hardly fixed, in that artists who create ecoventions are ready activists who incidentally champion environmental justice. For example, Patricia Johanson's projects function as infrastructure for modern cities and employ inventive reclamation schemes, but her nourishing, life-sustaining habitats are featured in the "Biodiversity" section because her work serves as the benchmark for this particular specialty. Similarly, the Harrisons could be classified in either the "Valuing Anew" or "Biodiversity" sections, but they are included in the "Activism" section since they view their process as a "conversational drift" surrounding discourses of nature.

Such categories should enable newcomers to draw distinctions between artists' intentions and practices. This catalog seeks to flesh out each artist's philosophical perspectives and methodologies. Such divergent practices yield works with quite different focuses. The competing beliefs and attitudes among artists make for a lively field. The following on-line chat among several members of the on-line eco-art dialogue (hosted by Ohio State University) took place January 18-26, 2001, and demonstrates the wide-ranging beliefs and attitudes that influence how one might initiate an ecovention in a city like Cincinnati.

"We are storytellers. Our art is about direct engagement." —Newton Harrison[1]

direct engagement

This section focuses on artists whose work has challenged people to consider problems and solutions that defy conventional thought and practice. Although several of the works included here have not been realized, per se, these artists disclose problems and often suggest solutions, so their works stand as a means to an end, unlike poetic practices that offer ritualistic acts of healing or consciousness raising and are conceived as ends in themselves. As suggested in the "Introduction," activism is a broad category, especially since any work of art that introduces an unfamiliar idea or alternative plan is indeed subversive, and therefore activist. This affirms the view that art is essentially political, precisely because interesting art challenges preconceptions and incidentally fulfills an activist role. By contrast, artists presented here have created intentionally activist works that often weave their way into the fabric of society to intervene in situations in unexpected ways.

Such interventionist schemes demonstrate the artist Joseph Beuys' (1921-1986) notion of "infiltration," which he likened to an oil stain spreading across a filter. "This is the other side of the filter: a new refined essence, the spreading of ideas to the different forcefields of human ability, a kind of inspiration that takes effect through a physical process of capillary absorption: psychological infiltration, or even the infiltration of institutions."2 While Beuys' oeuvre was wide-ranging, covering installation, performance, sculpture, drawing, lecturing, and political organizing, he was one of the first artists to employ performance art to articulate both the interconnection between human life and nature, and art's capacity to render radical social change.

To demonstrate his concern for bogs, Europe's most endangered eco-system, he carried out Eine Aktion im Moor (Bog Action) (1971), in which he jogged through a bog, bathed in the mud, and eventually swam through this swampy pit. Bogs were under threat of being drained to form low-lying land masses known as polders. Beuys described his interest in bogs as follows:
Bogs are the liveliest elements in the European landscape, not just from the point of view of flora, fauna, birds and animals, but as storing places of life, mystery and chemical change, preservers of ancient history. They are essential to the whole eco-system for water regulation, humidity, ground water and climate in general.3
Geographically, Europe ends with these regions, which is why Beuys believed Eurasia begins in Ostend, Belgium.

Joseph Beuys, Creativity=Capital

Even his mythologized Coyote. I Like America and America Likes Me (1974), for which he spent several weeks penned up with a coyote, explored ecological concerns. The unusually intelligent coyote, historically maligned by cattlemen who have viewed them as threats to livestock, symbolizes both its own endangerment and the extermination of native Americans, who consider it sacred.4 Best known for his lively blackboard lectures, Beuys traveled the United States articulating his Energy Plan for Western Man (New York, Chicago and Minneapolis, 1974), which introduced Americans to his theories about creativity's potential, man's relationship to nature, and his own mystical world view. During these performances, Beuys would draw, erase, and redraw throughout the event, diagramming his theory of social sculpture — art's political, evolutionary and revolutionary power to free humankind from all oppression. These talks culminated in lively discussions, during which he invited audience members onstage to debate him. His vision of radical democracy required every person's participation in determining his or her own destiny, which necessitates thinking, feeling, willing, and protecting creative freedom.5


Joseph Beuys, 7000 Eichen (7000 Oaks)


, "Pala" from 7000 Oaks

Concerned by Germany's rapid deforestation, Beuys first conducted a forest action in Düsseldorf in 1971 to call attention to the need for a progressive urban ecology. His contribution to the international art exhibition "Documenta 7" (1982), a plan to reforest Kassel, Germany with 7000 oaks, revisited this 1971 action. The oaks symbolize life's fragility and the mutually beneficial relationship between nature and humans. Anyone could participate by sponsoring a tree for $210. In return, each sponsor received a signed certificate stating "small oak trees grow and life continues."[8] Students from the Free International University helped plant the trees.

Placed aside four-foot-tall, locally-quarried basalt columns, the relational proportions constantly change. Each stone marker's stasis contrasts with the living tree, growing beside it. In actuality, fifteen different types of trees were used and only 60% were oaks. When Beuys died in 1986, only 5500 trees had been planted, so his son, Wenzel, carried forth the plan and planted the 7000th tree at the opening of "Documenta 8."[9]

In 1981, Beuys declared An Appeal for an Alternative, which he directed to all people belonging to the European cultural sphere and civilization. It was reprinted in the "Documenta 7" catalog.

He named the ecological crisis as one of four symptoms of the crisis in late-capitalism. He wrote:
Our relationship to nature is characterized by its having become thoroughly disturbed. There is the threat of total destruction of our fundamental natural basis. We are doing exactly what it takes to destroy the basis by putting into action an economic system which consists in unscrupulous exploitation of this natural basis...Between the mine and the garbage dump extends the one-way street of the modern industrial civilization to whose expansive growth more and more lifelines and life cycles of the ecological systems are sacrificed.[11]

Best known for conceptual works that expose current social injustices and inequitable power relationships, Hans Haacke is an activist whose strategies have played an instrumental role in the history of eco-art. For Cornell University's 1969 "Earth Art" exhibition, Haacke grew grass without any pesticides on an indoor mound of soil. Grass Grows grew out of his 1965 manifesto, which called for a changing, indeterminate, living-in-time, non-stable work of art that the viewer could handle. It would also react to its environment, temperature changes, and light.[12] Not only were dirt and seeds little-known art materials back then, but the work's changing nature introduced an artistic interest in time-based materials.


Hans Haacke, Bowery Seeds (Bowery Samen)

Grass Grows focused the audience's attention on an event that one typically takes for granted, while offering each viewer incredibly different experiences. For those who revisited the exhibition, watching winter rye grass grow became a memorable experience that undoubtedly changed their awareness of this everyday event.

YOKO ONO'S PAINTING FOR THE WIND FROM SUMMER 1961, INSTRUCTED VIEWERS: "CUT A HOLE IN A BAG FILLED WITH SEEDS OF ANY KIND AND PLACE THE BAG WHERE THERE IS WIND."

THE WORK OF HAACKE, BEUYS, AND GREEN PARTY FOUNDING MEMBERS GREATLY INFLUENCED GERMAN URBAN PLANNERS AND LANDSCAPE ARCHITECTS. GERMANY NOT ONLY LEADS THE WORLD IN URBAN ECOLOGY, BUT 43 OF ITS CITIES OFFER FINANCIAL INCENTIVES TO CONSTRUCT GREEN ROOFS.

Working with several architects on a 1968 plan for Brooklyn's Fort Greene Park, Haacke proposed to leave a portion of the park totally uncultivated. With Bowery Seeds (1970), he actually achieved this, as a small circular area of earth lay open awaiting airborne seeds. By leaving this area uncultivated, so that embedded and airborne seeds could vegetate wildly, this work resembled the spirit of Yoko Ono's proposition, Painting for the Wind (1961).

When Bonn's Federal Ministries invited him to propose a work for a new Ministries of Education, Science, and Justice building complex, Haacke proposed Vorschlag "Niemandsland" (Proposal "No Man's Land") (1973-1974). Though its form may have been similar to Bowery Seeds, its process, effect, and meaning would have been quite different given its location. Haacke proposed that a circular site, 25 meters in diameter, be carved into the pavement. A conveyor belt placed over the site would randomly deposit the soil on it. Unlike Ono's Painting for the Wind, Haacke's indeterminate project was not meant as a recipe, event-score, or proposition, but as a fluid alternative to the political system's rigid structure. He even requested the German government sign an internationally binding treaty that relinquished all rights in and to this territory, thus pledging to grant everyone access to this no-man's land.

Although this proposal was later rejected, it paved the way for the equally radical Der Bevölkerung (To the Population) (2000), whose process is very different, though similar in meaning and effect. Twenty-five years later, Haacke was once again invited to propose a public work for a German government building. Following the reunification of Germany, the capital moved from Bonn back to Berlin and the controversial Reichstag was chosen to house the Bundestag (German Parliament). His title Der Bevölkerung (To The Population) improves upon Dem Deutschen Volkes (To The German People), inscribed on the Reichstag's western portal in 1915. Haacke first noticed this troubling inscription in 1984. In order to express the sovereignty of German soil, as opposed to German blood, which could represent the population, Haacke requested each of the 639 Members of Parliament (MPs) to carry two 25-kilogram bags of soil from their home region. The soil was then spread around four-foot neon letters, which typographically match the original inscription's font, placed in a 21 foot x 68 foot trough in the Reichstag's northern courtyard.

Hans Haacke, Der Bevölkerung

Newly elected MPs contribute new soil, and when an MP's term expires, a portion of the soil, commensurate with his/her contribution, is removed. Plaques bearing all the names of the MPs and their respective districts are installed wherever Der Bevölkerung is visible. This new ecosystem mirrors the population's inherent diversity, while nature's tug-of-war symbolizes the democratic process. As Haacke observes:

In an extremely controlled building, the ecosystem of imported seeds in the Parliament's courtyard constitutes an enclave of unpredictable and free development. It is an unregulated place, exempt from the demands of planning everything. It is dedicated TO THE POPULATION.[13]

By displaying samples of water released from the Krefeld sewage plant in large glass bottles in the local museum, Haacke's Rhinewater Purification Plant (1972) increased public awareness of the Rhine River's deterioration. For this work, contaminated water was "pumped into a container where it was filtered and purified before entering a large rectangular basin housing goldfish... The presence of a large fish bowl and the picture-window view into the wooded landscape served as a point of contrast between a life-supporting ecosystem and one on the verge of collapse."14 Any surplus water was discharged into the garden behind the museum. When one considers the number of artists working in water reclamation today, one can see why this stands as Haacke's most influential work.

Case Study Hans Haacke, Rhinewater Purification Plant

note: Haacke's Rhinewater Purification Plant stands as the historical precedent for artists like Betty Beaumont, Jackie Brookner, Tim Collins, Betsy Damon, Reiko Goto, Basia Irland, Stacy Levy, Ocean Earth, Aviva Rahmani, and Buster Simpson, whose art concerns water quality. By displaying the Krefeld Sewage Plant's murky discharge, officially treated enough to return to the Rhine River, Haacke brought attention to the plant's role in degrading the river. By pumping the water through an additional filtration system and using the surplus water to water the museum's garden, he introduced gray-water reclamation.

breaking out of the box of culture onto the stage of history

Although projects proposed by the collaborative duo Helen Mayer (b. 1929) and Newton Harrison (b. 1932) have rarely been realized as proposed their influence can be measured by evaluating a particular project's implemented plan minus their proposed solution. They describe their working process and related contribution as a "conversational drift," since discussion is the starting point for many of their ideas, which are circulated by word of mouth.

We understand the universe as a vast possibly infinite conversation taking place simultaneously in trillions of voices and billions of languages, most of which we could not conceive of even if we knew they existed. Of those voices whose existence has impinged upon our own to the degree that we can become aware of them, we realize that our own understanding is imperfect at best.[16]

The Harrisons often engage journalists, mayors, public officials, government planners, business people, artists, farmers, and videographers in a public discussion to discover an appropriate solution that optimizes twin components: biodiversity, which depends upon the continuity and connectivity of living organisms; and cultural diversity, which requires framing and distinction between communities. Our work begins when we perceive an anomaly in the environment that is the result of opposing beliefs or contradictory metaphors. Moments when reality no longer appears seamless and the cost of belief has become outrageous offer the opportunity to create new spaces – first in the mind and thereafter in everyday life.[17]

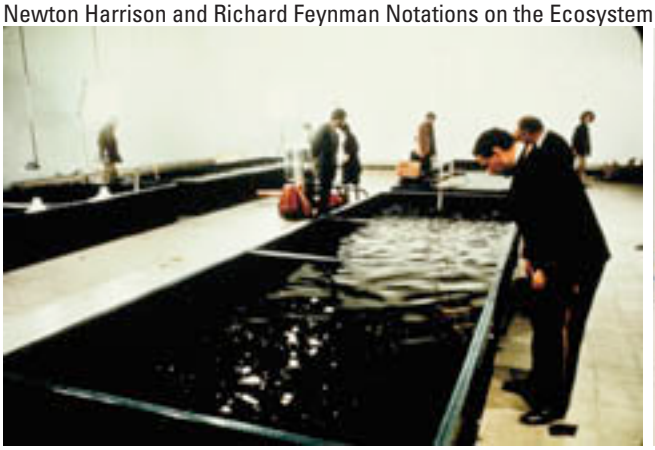
Their proposed solutions for invigorating watersheds and renewing urban and rural environments take the form of large-scale installations of cartographic imagery, poetic texts, collaged photographs, and video, which offer deconstructivist or fragmented narratives, that entail shifting metaphors. One aspect that differentiates the approach of the Harrison Studio (formed in 1993 to include architectural

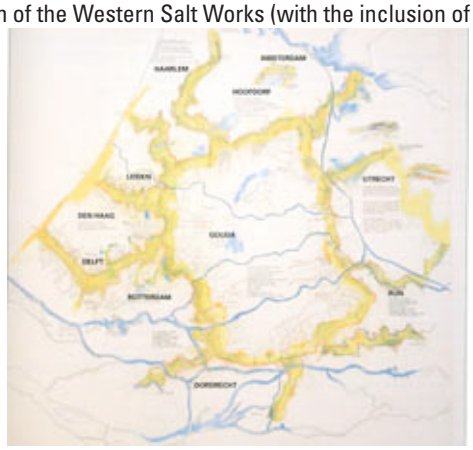
designers Gabriel Harrison and Vera Westergaard) from those of other eco-artists is that they examine several conditions, including cultural, economic, and ecological concerns, ranging in scale from a museum installation to a peninsula, such as Peninsula Europe.

Thirty years ago, however, their scale was much smaller. With Making Earth (1970), Newton romped in mud one year before Beuys' Bog Action. He gathered different kinds of manure, sewage sludge, sawdust, vegetable matter, clay, and sand to create seven piles of earth that he watered and worked until they smelled so rich that he could put the soil in his mouth. Invited to participate in the Los Angeles County Museum of Art's landmark exhibition "Art and Technology" (1971), Newton worked with Jet Propulsion Laboratory's Richard Feynman to create Encapsulated Aurora. First exhibited in a darkened room in the American Pavilion at Expo'70 in Osaka, Japan, Encapsulated Aurora presented the glow discharge phenomenon associated with the Northern Lights in 12-foot tall, 18-inch diameter plastic tubes. This project became Survival Piece #1 and led to Newton's second project, Notations on the Ecosystem of the Western Salt Works (with the inclusion of Brine Shrimp), which was exhibited with Encapsulated Aurora in "Art & Technology." This led to the Harrisons' Survival Series (1970-1973), which introduced self-sufficient harvesting techniques. They thus transformed public exhibition spaces into portable fish farms, orchards, and fields. Catfish, pigs, berries, beans, cucumbers, oranges, and avocados were then harvested, prepared, and served to museum visitors in Fullerton, Brussels, London, Houston, and Boston.

Once they realized that farming under lights was too energy-expensive, they "began to think more directly about reclamation and restitution at whatever scale opportunity offered."18 First Lagoon (1972), a small simulated aquatic ecosystem, featured hardy creatures that could live under museum conditions. The Scripps Institute of Oceanography awarded them a grant and they created six more lagoons between 1972 and 1979. The original 360-foot Lagoon Cycle is in the National Museum of Modern Art at the Pompidou Center in Paris, France.

Newton Harrison and Richard Feynman Notations on the Ecosystem of the Western Salt Works (with the inclusion of Brine Shrimp)





Harrison Studio, A Vision for the Green Heart of HollandMap illustrating the Bio-Diversity Ring

Several works from the 1980s led to environmental changes, though the Harrisons continued to emphasize conversational drift over direct action. Their Barrier Islands Drama: The Mangrove and the Pine (1982) project for the Ringling Museum in Sarasota, Florida, was partly responsible for the banning of the so-called Australian pine from South Florida. Their proposal to restore a tributary of the Los Angeles River, the Arroyo Seco Release (1985) for California Institute of Technology's Baxter Gallery, was completed by others almost fifteen years later.

In anticipation of people needing 600,000 new homes by 2010, the Cultural Council of Southern Holland invited artists, architects, and urban planners to propose solutions for a vast tract of farmland at the center of a ring of cities. The pilot who founded KLM named it "the green heart of Holland" when he flew over it in the mid-1930s. While about thirty other participants' proposals were exhibited in the Architecture Museum in Rotterdam, the Harrison Studio's proposal, A Vision for the Green Heart of Holland (1995), was exhibited in a small chapel in Gouda. Nonetheless, most of the issues the Harrison Studio raised and the strategies they proposed were included in the Minister of the Environment's formal presentation eight months later. The Harrisons were successful, in part, because several Dutch ecologists and landscape architects were involved in its conception. The Cultural Council of Southern Holland sent out 3000 posters and organized several public discussions, including a television program. Their Gouda exhibition traveled to Delft and Zoetemeer.

The inventive feature of their proposal is its Bio-Diversity Ring, a multi-use park with housing on its perimeter that encircles the existing farmland and polders to form a protective eco-urban edge for the "Green Heart" and Randstat, a group of culturally diverse cities including Amsterdam, Rotterdam, Utrecht, Den Haag, Haarlem, and Delft. The Harrisons value it as "the first Bio-Diversity Ring to be invented."20 If new homes could be built outside this one-to two- kilometer wide, 140-kilometer long Bio-Diversity Ring and its outreaching arms, then the Green Heart would both be preserved and the economic influx of ƒ120 billion to build 600,000 homes would flow to the communities outside the ring, rather than be concentrated on the giant new city or cities within it.

Furthermore, a Bio-Diversity Ring could absorb 5,000 tons of carbon dioxide and make about 25,000,000 cubic meters of clean water available, thus eliminating the need to use polluted Rhine water in summer. Finally, its gradual implementation would shelter it from a sudden economic downturn or a decline in migration. The Harrison Studio's vision for Holland, the first "continuous corridor for bio-diversity in Continental Europe," exemplifies the balanced ecological-economic design that they have promoted for decades, echoing their earlier idea to create an eco-security system by taxing the gross national product 1%.21

Newton and Helen Harrison Future Garden, Part 1: The Endangered Meadows of Europe Newton and Helen Harrison Future Garden, Part 1: The Endangered Meadows of Europe

Between 1977 and 1978, the Harrisons worked as community organizers to create Spoil's Pile. Three thousand dump trucks full of earth were dumped to transform one corner of Artpark's spoiled land into a twenty-acre meadow. This paved the way for Future Garden, Part 1: The Endangered Meadows of Europe (1996-1998), a continuously changing, living, 3600-square meter color field atop Bonn's Kunst- und Ausstellungshalle der Bundesrepublik Deutschland.

Newton and Helen HarrisonFuture Garden, Part 1: The Endangered Meadows of Europe

v

By transplanting a 400-year old meadow from the Eifel region to the museum's roof, they saved a section of an eco-system that was being destroyed to make room for a housing development. A wet meadow, a dry meadow, and a stone meadow were added to create diversity. In 1997, a portion of this meadow was moved and reconstructed along the Rhine in Bonn's Rheinauen Park (a site chosen by the Harrisons and several botanists). The meadow was called a future garden because they saw it as a model for a future forest, future estuary, or future lake, as well as a biologically diverse alternative to a monocultural Europe.

Incorporated in 1980 as the Ocean Earth Construction and Development Corporation (Ocean Earth), it changed its official name to Ocean Earth Development Corporation in 1994, so as to avoid confusion with the Paris-based agency OECD. Basically an artist-run, yet incorporated, research and development think tank, Ocean Earth aspires to create necessary, useable, marketable, and therefore saleable technology. It was:

chartered to produce "architectural components" and "media services." Both lines of production are directed towards changes in the perception, organization and management of habitat—ranging from immediate environs of the body to the entire planet. Principles come from the classic books on architecture of Leon Battista Alberti, in which four responsibilities are defined. They are, for a given city to assure 1) clean air, 2) clean water, 3) circulatory space, and 4) defense. Ocean Earth works in these four sectors, separately and in combination.[23]

Ocean Earth's product brands fall under four categories: 1) Cycle Power: the development of non-polluting energy production using water bodies; 2) Earth Works: systems designed to restore large numbers of keystone animals necessary for plentiful, good water; 3) City Bild: consumer goods such as urban mega-structure components and Exoware-brand bodywear; and 4) Space Force: civil-satellite monitoring of global hot spots with policy, news-media and diplomatic intent. Its membership at any particular time reflects each project's technical needs. Over the past twenty years, numerous individuals and groups have worked with Ocean Earth, including artists Christina Cobb, Bill Dolson, Peter Fend, Julia Fischer, Colleen Fitzgibbon, Ingo Günther, Heather Josephine Jansen, Win Knowlton, William Meyer, Dennis Oppenheim, Paul Sharits, Taro Suzuki, Wolfgang Staehle, Glenn Steigelman, Eve Vaterlaus, Sophie Vieille, and Joan Waltemath; naval architect Marc Lombard; architect Kevin Gannon; and scientists from IFREMER oceanographic institutes (France), Cal Tech, Institute of Gas Technology, SUNY Stony Brook, Danish Meteorological Institute, the Japan Ocean Industries Association, and NASA.[24]

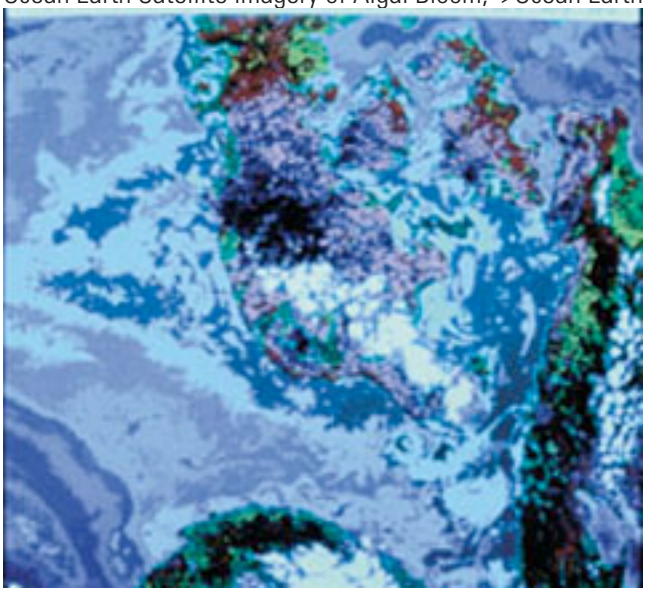
While several eco-artists regularly use satellite imagery to gain a bigger picture of the destruction or of nature to study the interrelationships of topographical forms, Ocean Earth was the first to use them as a powerful information tool. Ocean Earth gained notoriety when news sources like CNN, NBC, CBS, several European television stations, and international newspapers like the International Herald Tribune started purchasing their Space Force group's satellite imagery, produced using Landsat civil-satellite data. Space Force could process satellite data because member Bill Dolson had worked on the software for Landsat, and they hired LogEtronics, a state-of-the-art satellite data processor. Using revenues from their television sales, Space Force purchased the data from satellite ground stations, so they controlled the the data's application and owned the related images. Space Force's specialty was selecting the site/date and frame of the data. 26

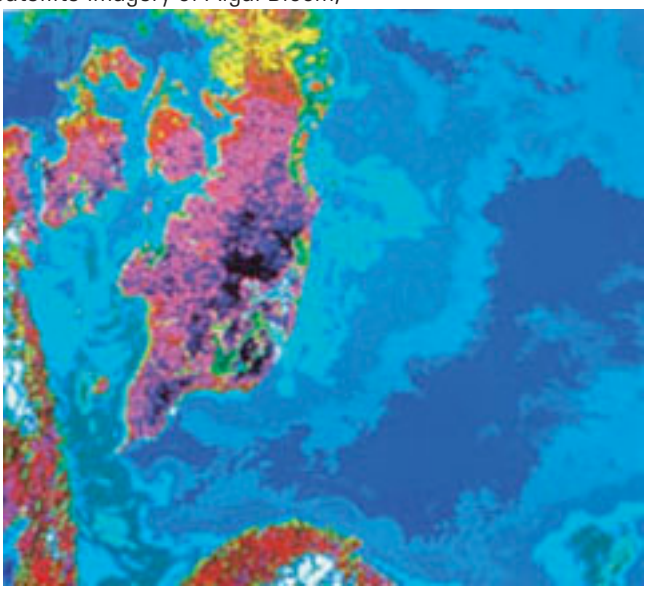
According to Ocean Earth's résumé, their satellite survey maps of basins and sub-basins were instrumental in anticipating, providing evidence for or explaining many news-breaking stories during the 1980s. Ocean Earth imagery provided crucial information about attack routes in the Falklands (1982) and Beirut (1982), explanations for Chernobyl's melt-down (1986), the motivations behind Swedish prime minister Olof Palme's assassination (1986), Russian submarine bases (1986), Pakistan's nuclear facility (1987), and Iraq's invasion of Kuwait. At the same time, they provided news services ecologically-sensitive information, but there were far fewer media outlets for eco-related stories. Nonetheless, they sold a story about the Amazon basin and its impact on the Caribbean Sea to Turner Broadcasting and the Cousteau Society (1983).27

Sticky-Click Here

What is most significant is the way Ocean Earth's ecologically-driven pursuits have incidentally identified sensitive military maneuvers of global import. For example, their 1984 decision to study Iraq's Basra marsh frame, rather than its Majnun marsh, revealed that the Russians had dug twenty narrow, parallel channels to penetrate Iran's Karun River with enough force to divert about 100 miles of the Tigris River (hence, the epithet "River Rifle"), potentially altering Iran's boundaries. Artist Peter Fend's familiarity with artist Dennis Oppenheim's never-built Dead Furrow (1968), channels designed to alter a river's flow, enabled this veteran Ocean Earth participant to identify the purpose of these channels, which incidentally also provide ecological advantages for water-stressed regions.28 In the end, a UN contact secretly transferred Ocean Earth-collected photographs, charts, maps and videotapes to Iranian officials, who used the information to locate and destroy Iraq's "River Rifle."

Ocean Earth Satellite imagery of Algal Bloom, >Ocean Earth Satellite imagery of Algal Bloom,



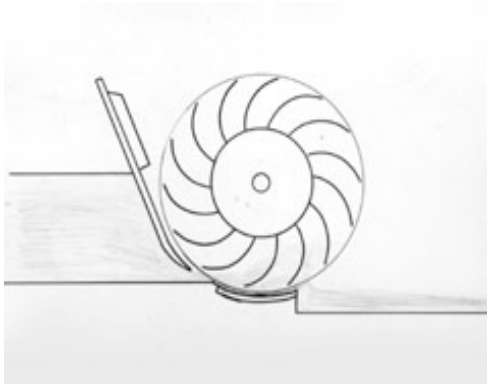


As if to remedy this misuse of Ocean Earth's findings and to prove the group's apolitical position, Fend met with Iraqi officials in their Paris embassy in 1990. Fend proposed that Iraq rebuild the destroyed Earthworks, whose positive environmental applications include de-desertification and river-restoration.29 In 1988, Ocean Earth had developed a massive de-desertification plan to green the deserts of Iran, Iraq, Syria, Kuwait, Jordan, Turkey, Saudi Arabia, and various emirates, which they later hoped the military forces of Desert Storm would construct. That same year, the precocious Ocean Earth group released a one-kilometer resolution satellite overview to Danish, German, and Swedish media. This image indicated a toxic algal bloom in the North Sea that had spread from a small area near Sweden to the entire ocean body around Denmark in just one day.

In 1985, the Algerian ambassador to France had asked how Ocean Earth could help the Algerian army restore Algeria's desert to savannah. Inspired by this query, Ocean Earth finally answered him with a proposal for a bird path extending from the Algerian mountains to the Black Sea basin. Exhibited in 1994 for "Startbahn Österreich" at Galerie Metropol, Vienna, Austria, their proposal called for migratory species like birds and insects to provide nutrients that enable vegetation to take hold and spread, creating an appropriate habitat for larger mammals.[30]

Ocean Earth, Methane Fire

While much of Ocean Earth's early work has centered on saltwater basin mapping and providing "Motile-Media Site Monitoring," their most ecologically relevant projects involve their "architectural components," such as GASCAR (Green Algae System-Clean Air Rig/ Carbon Absorption Rig/Cities Architecture Rudiment). This giant algae system rig was first introduced in 1993 at the "Venice Biennale Aperto Exhibition" and traveled throughout France from 1993 to 1996. GASCAR, a structure that is submersed up to 40 meters, facilitates the growth and harvesting of marine or freshwater algae (plants like hyacinths, or fuel-rich microorganisms that grow on the water's surface). Other Ocean Earth-designed non-polluting, energy-harvesting structures include Large Algae Systems, Medium Algae Systems, Wateroogster (Freshwater Algae Harvester) and the OUW (Ocean Earth Undershot Water Wheel). Ocean Earth is currently dedicated to creating a highly efficient water wheel, inspired by Poncelet's theories and named for this 19th Century French inventor. 32



Ocean Earth, sketch of Poncelet Undershot Water Wheel

Ocean Earth plans to adapt a highly efficient water wheel, based on the innovative theories of Poncelet for use in deep rivers. The Water Wheel Factory produced this manufacture-ready C.A.D. design based on Ocean Earth's specifications for an undershot water wheel. Ocean Earth's Poncelet Undershot Water Wheel assures nutrient flows to the sea. Their research shows that wrongful fishing methods offshore and large river modifications upland, like dams, are the chief causes of the fish population decline.

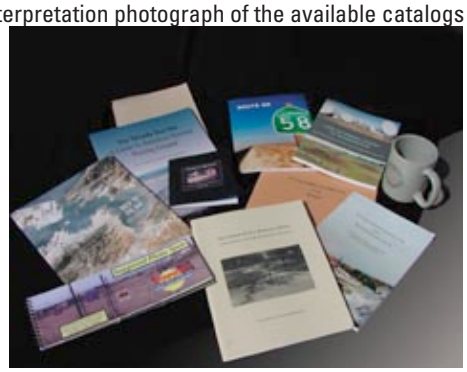
research centers

Although the Center for Land Use Interpretation (CLUI) is a non-profit organization, it resembles Ocean Earth, since its endeavors are often associated with a key individual, yet they really involve team members' efforts. Since its 1994 inception, CLUI's "corps" has included John Alvarez, Lisa Boulanger, Eric Carver, Ellen Coolidge, Matthew Coolidge, Miles Coolidge, Walter Cotton, Kelly Coyne, Mark Curtin, Diana Drake, Damon Farragut, John Fitchen, Jennifer Gabrys, Jon Hartzog, Sebastian Hassinger, Chris Kahle, Michael Kassner, Camille Kirk, Erik Knutzen, Carrie Lincourt, Angela Loughry, Lucy Lin, Suzanna Mast, Sabrina Merlo, Lize Mogel, Steve Parker, Rex Ravanelle, John Reed, Shelby Roberts, Steve Rowell, Amy Russell, Sarah Simons, Melinda Stone, Dave Vamos, Igor Vamos, and Diana Wilson, among others.

CLUI's website declares its dedication "to the increase and diffusion of information about how the world's lands are apportioned, utilized, and perceived."33 One could say that "anthropogeomorphology," the study of land forms created by man, is CLUI's primary field of inquiry. In this respect, CLUI has inherited Robert Smithson's fascination with post-industrial sites, but its purview is much broader than his, and even includes classic Earthworks such as his Spiral Jetty. Despite its resemblance to a dry government manual, The Nevada Test Site: A Guide to America's Nuclear Proving Ground, which was CLUI's first publication, introduced mostly original research and created an instant buzz, targeted as it was to a general audience.

Wildly prolific, CLUI maintains an on-line database of "unusual and exemplary land-use sites;" manages a research center in Los Angeles, California (facilitates processing, archiving, and exhibiting information); sponsors the Land Use Museum Complex (encompasses CLUI-identified land forms, Wendover Exhibit Hall in Wendover, Utah, and other, often temporary, multimedia activities); operates the Desert Research Center in Hinkley, California; regularly exhibits in other museums; organizes and distributes its exhibition catalogs; leads site visits and bus tours (led by CLUI guides and accompanied by onboard videos), and publishes the quarterly Lay of the Land newsletter.

The Center for Land Use Interpretation photograph of the available catalogs and mugs produced to date



The website alone is an incredibly useful tool. A visitor can index a site by entering a key word, state, site name, or land-use category, such as cultural, industrial, military, mining, nuclear/radioactive, research and development, transportation, waste, and water. She or he can even explore sites of interest by cross-matching a category and a locale. For each entry, the visitor can access the site's description, its brief history (recounting its evolution from a natural state to its present form), current status and future plans. In several cases, photographs and site maps are available.[34]

To CLUI's credit, most projects proposed in their September 1996 Site Extrapolation Projects pamphlet actually came to fruition. Its Site Extrapolation Division examines the particulars of specific landscapes and sites, using photography, video, and sculpture to "enhance the legibility of the site and the issues it raises."35 Like Ocean Earth, CLUI has experienced a greater demand for information of military and industrial consequence. When asked whether this reflects a particular CLUI fascination, Matt Coolidge explains:
[S]ome people seem to interpret an apparent emphasis on our part on military or industrial sites, but I think what that's really indicative of is a lack of a public perception about the magnitude and extent of alteration and transformation through those branches of human endeavor. The hinterlands are very much related to the cities. They're the other side of the coin. Things in the city would be very different if it weren't for the nuclear proving ground.[36]

Ironically, most sites of CLUI interest support urban centers. Sites like mega-landfills, nuclear test sites, military training facilities, borate mines, and magnesium plants are nonetheless almost invisible to the urban populace, though they affect city life in ways both positive and negative. In response to the concern that CLUI doesn't take a political stance, Brendan Bernhard concludes:
[I]t may be more effective to put up a Suggested Photo Spot sign in front of a landfill than it would be to write an essay about why it (and other places like it) shouldn't be there in the first place — or why their presence is unavoidable, or why they're out in the middle of nowhere because it's better than having them in the cities, or why... Well, it does get complicated[37]
Just as Ocean Earth has worked hard to avoid identification with any one political agenda, CLUI attempts a neutral approach, which evidently frustrates many people, who consider CLUI too informed not to take action. As Igor Vamos remarks, "our goal is to help people by providing information, and we will try to provide information for people who have political agendas."[38]

Center for Land Use Interpretation, image of people on a tour Center for Land Use Interpretation, image of people on a tour Center for Land Use Interpretation, image of people on a tour

Most CLUI museum exhibitions are accompanied by bus tours to nearby sites of interest. These enable all sorts of people to experience

first-hand dozens of "unusual and exemplary" man-made landforms. Once the local exhibitions or tours are over, interested viewers can take a self-guided tour using information provided by CLUI's detailed exhibition catalogs or tour vicariously through the Lay of the Land newsletter and their fascinating website. Several popular guidebooks like Route 58, 5th Avenue Peninsula Tour (Oakland), Points of Interest in the California Desert Region, Around Wendover, and Subterranean Renovations: The Unique Architectural Spaces of Show Caves were created without an accompanying museum exhibition.

In 1996, Bern-based artist George Steinmann initiated the Forum for Sustainability, a research center in the Priluzsky region of Komi Republic, Russia. This center has a mission similar to CLUI's Wendover Camp and Desert Research Center. Located on the western slope of the Ural Mountains in Russia's extreme northeast Komi Republic, the boreal Taiga forest is significant because it is one of Europe's last remaining pristine, uncultivated forests. It demonstrates what the forests of Western Europe and Canada's northern territories were like 1000 years ago. Rich in mushrooms, berries, and medicinal plants, this forest is nevertheless at risk of environmental degradation, because it is rich in exploitable natural resources. Russia's second largest energy reserves are located in Komi, which is also Russia's prime resource for metals like bauxite, titanium, chromium, manganese, and barium. The dominant industries in the region are coal mining, petroleum and natural gas, timber, pulp, and paper industries.[39]

George Steinmann, Komi Women, singers and healers

Addressed to and involving the people in Komi, the forum's activities will "especially through the infrastructures of the international art world, create attention to the issues of pristine forest conservation."[40] By educating the local people about their environment's ecological significance, Steinmann hopes that Voj-Vozh (a growing sculpture) can be preserved as a place to study boreal forest conservation, sustainable forest management, and biodiversity. Recent research has already unearthed very interesting scientific data regarding lichens. Of particular interest is the Komi healers' knowledge of medicinal plants. Steinmann is working with a pharmacist to prepare the essences of plants, berries, and herbs for future use as phytotherapeuticals.

"Growing step-by-step, Voj-Vozh [Komi language for "in the North/in the forest"] is a transdisciplinary network, a model for sustainability through art."[41] Steinmann is responsible for developing Voj-Vozh (a growing sculpture) in its entirety. Specific advisers are the people of the Prilusky region (including foresters, guides, shamans, and healers); The Swiss Federal Forest Agency, Bern, Switzerland; Professor Dr. Yrjö Haila, Department of Environmental Policy, the University of Tampere, Finland; and The Institute of Biology, Komi Scientific Center, Ural branch of the Russian Academy of Science.

A wooden building designed by acclaimed Helsinki-based Heikkinen-Komonen Architects, the Forum for Sustainability facility accommodates ten to twelve people and offers a room for studies and education, a community room with cooking facilities, and a banja (sauna). Design priority was given to ecological sustainability, environmental protection, and the use of local materials. Future forums will assemble local and foreign students, scientists, foresters, ecologists, and artists, in order to build "positive energy and through that, create help for self-help."[42] Falling under the auspices of the Komi branch of the World Wildlife Foundation (WWF) International, a nongovernmental agency under mandate of the Swiss Agency for Development and Cooperation, the forum is run by the Administration of the Municipal Union for the Priluzsky region.

Drawing for Voj-Vozh, Forum for Sustainability

community action

Like other artists in this section, Basia Irland makes interdisciplinary and participatory works, so their influence extends well beyond the art world. She gained a lot of attention for A Gathering of Waters: Rio Grande, Source to Sea (1995-2000), a participatory performance staged along the world's third most endangered river, the 1885-mile Rio Grande/Río Bravo basin, which rises in Colorado, passes through New Mexico, extends along the Mexican border, and flows into the Gulf of Mexico. Hundreds of artists, government agencies, private water users, farmers, ranchers, Native American leaders, and ordinary people collected small river water samples in a canteen and logged their experiences in a field book. The canteen and log book, which were voluntarily passed hand-to-hand, community-to-community, traveled by "boat, raft, canoe, hot-air balloon, car, van, horseback, truck, bicycle, mail, and by foot,"43 tying diverse communities to a common interest. In 1999, Irland completed a documentary on this extraordinary event, that only she could imagine wouldn't result in losing the lone canteen. This grass-roots activity explored the rich diversity of the upper and lower river basins and contributed to the public's awareness of the river's relationship to the cultural and environmental issues of its adjacent communities.44

BETWEEN 1995 AND 2000, HUNDREDS OF ARTISTS, GOVERNMENT AGENCIES, PRIVATE WATER USERS, FARMERS, RANCHERS, NATIVE AMERICAN LEADERS, AND ORDINARY PEOPLE COLLECTED WATER SAMPLES FROM THE 1885-MILE RIO GRANDE, IN A CANTEEN AND LOGGED-IN THEIR EXPERIENCE. THE CANTEEN AND LOG BOOK WERE VOLUNTARILY PASSED HAND-TO-HAND AND TRAVELED BY BOAT, RAFT, CANOE, HOT-AIR BALLOON, CAR, VAN, HORSEBACK, TRUCK, BICYCLE, MAIL, AND BY FOOT, ON THEIR WAY TO THE GULF OF MEXICO.

With one recent group of portable sculptures, Irland juxtaposed "the human impulse to chart —whether U.S. Geological Survey Maps, aerial photographs, or archeoastronomy drawings from ancient cultures— with the power of water to inscribe itself on the rocks beneath a glacier or in the marks of the tide."[45] Poetic trip kits like Kit for Paddling through Stars Floating on a Lake (2000) or Of Pelicans and Palapas (1999) hold maps, charts, photographs, books, objects, and videos, providing both the necessities for a water journey and repositories for a record of the trip.

Basia Irland, Of Pelicans and Palapas

Created while living in Todos Santos, Baja, Mexico, this kit is made from palm fronds to mirror the local dwellings (or palapas) and is carried with a tumpline across the forehead to reflect the local culture. This kit holds constellation maps, international words for water, a bleached pelican skull, and a video to construct an intimate connection between the traveler's gear and local watershed culture.

When invited to create a fountain for the Albuquerque Museum, Irland took advantage of an opportunity to enlighten people about the preciousness of water in the Albuquerque desert environment. Like a desert arroyo, Desert Fountain depends on the harvesting of rain or snow. When full, its 50-gallon storage tank enables the fountain to flow for 30 hours over three pair of bronze arms with etched, cupped hands. In the summer of 1999, she was rewarded for her thoughtfulness when a severe drought forced the state to temporarily turn off all public fountains. An unexpected shower made Desert Fountain the only flowing fountain in the state, and created the public stir necessary to raise awareness about this arid region's need for water conservation.

During the severe drought of 1999, this fountain, which collects precipitation in its 50-gallon storage tank, flowed, while all other New Mexican fountains had to be turned off.

Basia Irland, Desert Fountain n

Dedicated to archiving the use and abuse of water sources, Irland is the founder and director of the International Water Institute and is often the only artist to address international conferences on water and environmental policies. Her recognized expertise in harvesting precipitation has led to her involvement in massive rainwater collection and recirculation schemes. In 1998, the California Polytechnic University, San Luis Obispo invited her to discuss the possibility of harvesting and recirculating rainwater to make its campus self-sufficient. Irland is currently constructing two rainwater harvesting demonstration projects, one for the University of New Mexico and another for Pueblo of Isleta, New Mexico.

Kathryn Miller, Seed Bombing the Landscape

Since 1992, Kathryn Miller (b. 1953), an artist also educated as a biologist, has distributed Seed Bombs (1992-2001) to re-vegetate degraded, physically abused or barren landscapes with native plants. When local seed bombs are exhibited as part of a museum exhibition, museum visitors may take one and toss it locally, wherever they feel native plants are needed. Similar in concept and impact to Ono's Painting for the Wind (1961), Haacke's Bowery Seeds (1970), Sonfist's Seed Catcher (1973), and conceptualist Rob Pruitt's Art Idea No. 20: Slash Open a Bag of Potting Soil, Sprinkle Plant Seeds in the Wound and Watch them Grow (1999), Miller's Seed Bombing the Landscape is less a proposal and more a call for real action, which results in plants randomly sprouting wherever seeds take root. A work entitled Subdivision (1992-present) entailed building small soil houses as containers for sprouting plants. The plants in turn provide nectar for butterfly species, whose disappearance reflected food shortages. Meant to draw attention to the way subdivisions replace local ecologies with buildings, asphalt, concrete, and non-native plantings, Miller's soil and seed homes dissolved over time to become part of a neglected Isla Vista Park's landscape.

EACH SIX-SQUARE FOOT PATCH OF LOS ANGELES LAWN REQUIRES MORE THAN 220 GALLONS OF WATER ANNUALLY. LAWNS CONSUME 60 %OF ALL LOS ANGELES DRINKING-GRADE WATER, WHOSE SOURCE IS UP TO 400 MILES AWAY#6

IN THE UNITED STATES, LAWN CARE IS A $25 BILLION INDUSTRY. IN 1988, 67 MILLION POUNDS OF PESTICIDES, WHICH ENTER THE WATERSHED AND FLOW INTO THE RIVERS AND OCEANS, WERE SOLD FOR LAWN CARE#7

FERTILIZERS ARE SO DELETERIOUS THAT THE K-MART CORPORATION WAS FINED $26,500 WHEN MINNESOTA DEPARTMENT OF AGRICULTURE (MDA) INSPECTORS DISCOVERED IMPROPERLY-STORED BAGS OF FERTILIZER AT TWO LOCATIONS. AT ONE SITE, DAMAGED BAGS WERE LEACHING FERTILIZER INTO THE WATERSHED VIA A STORM DRAIN THAT RAN INTO THE RAINY RIVER#8

Like Irland and Ocean Earth, Miller is particularly concerned by the region's aridity. In collaboration with Michael Honer, Miller began the Desert Lawn series in 1994. Dressed in scrubs like doctors from the tele-drama ER, they raced between deserts, chemical plants, and rivers with a plot of grass on a gurney, hooked up to an intravenous drip. For Lawns in the Desert (1995), they displayed related photo-text panels and Desert Lawn's props next to 35 eight-gallon bottles of water — the amount of water this small plot consumes annually — to illuminate the absurdity of artificially sustained lawns. Like CLUI, Miller's ecologically sensitive discoveries have been compiled into nine artist's books to date.

Kathryn Miller and Michael Honer, Desert Lawn actions

Resembling a scene from ER, Honer and Miller race through the desert with a plot of lawn splayed out on a gurney attached to an intravenous drip. This absurdist performance stresses the emergency caused by the lawn's pathological state of dehydration and its dependence on deadly chemicals.

Suzi Gablik, Art and the Big Picture

How do individuals overturn a world view and break free of its limiting ideologies? What makes us change our beliefs about something?

In Western culture, artists normally do not train to engage with real-life problems. They learn instead to be competitive with their products in the market place. Because we live in a society that is oriented around manic production, maximum energy flow, and upscale consumerism, profit has become the primary criterion by which we measure every good, every activity, every attitude, and every cultural product. All of our cultural institutions are subtly and lethally influenced by this ideology-based on set patterns of conventional success and its economic imperative. Artists are thus constantly being challenged in their identity as winners or losers in the success game, and "professional recognition," in the form of brisk sales and positive reviews is a primary incentive that colors the internal rhythms of art making.

So are we forever locked into the inevitability of a world view based on materialism-and with it, a certain kind of art fixated on the notion of saleable objects? Or can we recover, if we choose, from the estrangements of Western civilization? Instead of art-as-commodity, deprived of any useful social role, can art actually help us to revision ourselves and our way of living on this earth? Can we learn to participate in the "great work" of our time, which, according to the great geologian Thomas Berry, involves "moving from a devastating presence on the planet to a benign presence?"

In the dominant paradigm, art is understood mostly as static objects, existing in museums and galleries, separate from ordinary life. The work of artists who have been included in this exhibition goes against the prevailing current. It requires you to step out of line, to break with the past. Other people will feel the ripples and often, they won't like it. Make no mistake: to change the paradigm from which art operates is to change something about its fundamental nature. Beliefs tell us what is possible and what is not.
People will want to say, for instance, what do art and issues of chemical contamination have in common? What possible link can there be between concepts like "endangered species," renewable and nonrenewable resources, or damaged forests, and the "personal problems" artists have in building a successful career today?

Until a few decades ago, artists generally were not motivated to express concerns about biodiversity, global warming, reclamation of wetlands, or acid rain in their work. Aesthetic paradigms acting in partnership with environmental impact statements was unheard of. But now, a whole cadre of artists has emerged with a new form of practice, loosely called "ecoventions."

Several years ago the University of Chicago alumni magazine featured the philosopher Richard Rorty on its cover, announcing that "there is no Big Picture." This is the very philosophy that has brought the world to the edge of eco-systemic collapse. Thus, for anyone who wants to change the tides of where our civilization is headed, the first step is to look at the Big Picture-and to become conscious of how profoundly they have internalized the values and dictates of the dominant paradigm. And then, as Annie Dillard suggests, you go home and soak your feet. Because the task at hand, the task of renewal, is very daunting-and will require a peculiar internal state which ordinary life does not induce.

If you are going to challenge the old Cartesian dualisms-like the one that separates art from life-with more participatory and engaged forms of consciousness, then you will also need a whole new language: one that expresses interdependence and reciprocity, so that the creative imagination can meet its new task. Changing paradigms is more than just a conceptual challenge: it requires that we personally leave behind certain things that have been a central part of our individual and cultural self-definitions. Hard-edged individualism will not apply. The bare white walls of the gallery and the aluminum frame will not apply. Recognizing an artist's worth through the fact of showing or not showing, selling or not selling, will not apply. The archness and bravura of postmodern aesthetics will not apply, because this art comes from a different vision. It is a vision dedicated to a single perception: how to live appropriately in an interconnected universe.

Elizabeth Thompson, The ART of WHOLE SYSTEMS

GLOBAL CONTEXT

Noted futurist Duane Elgin identifies five Adversity Trends currently in full force
planet-wide: climate change, species extinction, population growth, resource depletion and poverty. If we take seriously the magnitude of these trends we are surely faced with what has been called a Whole Systems Challenge.

SYSTEMS THEORY

While each of these trends can be examined individually, as has been the case historically, Systems Theory provides a useful lens through which the inherent dynamic relationships between these trends can be understood. In brief, systems theory is able to account for the complexity and interdependence of all phenomena, and the embedded relationships between them. This includes both the internal properties of the system, as well as its external relationship to the environment; the latter of which includes space, time, viewer and society. Systems theory can be applied directly to an interpretation of the work included in Ecovention. The artists work collaboratively with biologists, community planners, educators, engineers and others, and employ innovative interdisciplinary problem-posing and problem-solving strategies to 'render' the work. The resulting installations reveal to us the complex web of dynamic interrelationships between natural and human systems. The art occurs within the relatedness and interaction between all parts of the system. The artist becomes active agent/strategist/ inventor and facilitator of a larger interactive process of social and environmental change.

From EARTHWORK to PLANETWORK

Artists involved in the land art and Earthwork movements of the late1960s and 1970s looked at the earth primarily as a 'resource' material for their work, engaging the land as a sculptural medium, concerned primarily with formal sculptural issues. This relationship to the earth recapitulated the prevailing cultural notion of the human being's distinct 'otherness' from the natural world, a solopsism which literally paved the way for a staggering exploitation of the earth's "endless" resources. The work in this exhibition directly challenges this notion and demands a humbling, Copernican shift in our perception of the human being's relationship to the earth, of the earth's fragility, and of the vastly complex planetary system in which we participate.

PARTICIPATORY AESTHETICS

Inherent in the perceptual shift required to engage this planetwork is what has been described as an aesthetics of participation. In this context 'participatory aesthetics' describes an art that is no longer a space for the personal subjective realm, but an art that seeks to re-integrate the human being into the larger ecological system within which he/she is embedded. It requires the surrender of an exclusively human-centric worldview in order to fully engage its meaning. This is an art and art practice that seeks to find a new relevance for itself in the face of enormous global challenges. It is an art that responds to the new understandings in science, philosophy and psychology that form the basis for an emerging 'new paradigm'.

The ART of WHOLE SYSTEMS

The artist as active change agent directly confronts the whole systems challenge we face as an earth community. Employing systems theory strategies, the artist creates an interactive 'space' in which the role of 'viewer' as passive consumer is transformed into that of active participant in an ongoing interdependent relationship with the earth's fragile ecosystems. The work inspires new understanding of the crucial role the artist plays in the creation of a sustainable future. It is a clarion call we must urgently heed.

I am indebted to Hans Dieter Huber and his essay The Artwork as a System and its Aesthetic Experience, 1989, delivered at The University of Florida and at The University of Texas at Austin, for this explanation of Systems Theory.
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