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# 3 Rivers 2nd Nature, 2000–2005: Water, Land & Dialogue

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## Résumé

3 Rivers 2nd Nature était un projet conçu et mené durant cinq ans par un artiste et qui consistait à examiner la forme, la fonction et les valeurs esthétiques sous-tendant la signification de la nature dans le comté d'Allegheny dont Pittsburgh, Pennsylvania est le centre. Il avait pour objectif de susciter dans le public un nouveau paradigme d'appropriation et de préoccupation envers l'infrastructure verte des zones urbaines. Le projet était axé sur les écologies mouvantes des fronts de mer et des vallées sillonnées de cours d'eau dans les zones postindustrielles. Passant en revue la théorie et la méthode sur lesquelles s'appuie ce projet, l'article explique la façon dont des interventions pratiques sur l'eau et le territoire s'insèrent dans un dialogue culturel qui est à la fois local et international. La conclusion décrit l'impact réel du projet. Présentée en relation avec la communication de Lora Senechal Carney sur le projet Nine Mile Run, cette analyse d'une approche de la recherche guidée par la pratique est questionnée en tenant aussi bien compte de la distance critique que de la proximité critique. Lorsque l'oeuvre fait l'objet d'un tel examen, on aboutit à une situation idéale.

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## Background

In 1996, a team that included three artists and a land-use attorney initiated a body of experimental art-based, environmental research on Nine Mile Run, in Pittsburgh, Pennsylvania (also see "Ecology and the Ethics and Aesthetics of Collaboration" in this issue). The intent of that work was firmly established in 1997 with a "project philosophy"<sup>1</sup> that referenced readings in discourse theory (Jurgen Habermas, Mark Warren, Richard Sennet)<sup>2</sup> and theoretical approaches to public art (Suzi Gablik, Suzanne Lacy, Heiner Stachelhaus).<sup>3</sup> The project methods were framed by ideas of sustainability (William McDonough)<sup>4</sup> and restoration ecology (Anthony Bradshaw).<sup>5</sup> That project began over a decade of work in Western Pennsylvania where theories about aesthetics, ecological recovery, and radical approaches to art, planning, and design were tested in discursive-creative practice. The initial work at Nine Mile Run and its focus upon realizing opportunities rather than "fixing" problems became the foundation for new reading and research in the subsequent project 3 Rivers 2nd Nature (3R2N), which I will describe and analyze below. I was one of the primary investigators on both projects.

## Three Rivers 2nd Nature, the Creative Intent

The questions that drove the project known as 3 Rivers 2nd Nature revolved around cultural agency, discourse theory, and the use of a research-based practice to advocate for the recovery of the natural environment of the region. The intent was to develop a research initiative that would examine and test the effect that artists can have on the real-world aesthetic conditions of post-industrial ecology by initiating and developing a process of dialogue and creative authorship. In this project, artists and scientific experts worked with non-profit organizations to develop a new level of attention and interest in water and nature along the Allegheny, Monongahela, and Ohio Rivers in Allegheny County, Pennsylvania, an area which includes Pitts-

burgh and its surroundings. The plan was to focus upon the idea of a natural (green) infrastructure as a subject of artist-led interdisciplinary research and analysis integrated with ideas of public discourse, intending significant environmental/aesthetic impact in the process.

## Aesthetics

This research was informed by the alternatives to object-based aesthetics that have recently emerged in the philosophy of environmental aesthetics;<sup>6</sup> in particular, the initial impetus for work on 3R2N embraced a mix of Allen Carlson's scientifically informed aesthetics with Arnold Berleant's ideas about a move towards integration of subject/object. Where Carlson embraces rational scientific concept and fact as means of enabling aesthetic analysis to have impact upon public policy, Berleant is more interested in thinking of humanity and its environmental context (people, things, and places) as one field. He works to provide an aesthetic paradigm that will open the world to a "...full perceptual vision whose implications are not only aesthetic but moral and political as well."<sup>7</sup> Berleant both influences and validates the 3R2N focus on art practice as a means to understand and value a changing environment. The project team was seeking to examine the causal effect of aesthetics upon ethics and the subsequent potential to impact public decision-making about landscape and open space.

In 3R2N we worked from the premise that human values arise from the sum of lived experience and concept-informed perception. (This is where Carlson's ideas come into play.) On the experience side, we developed an outreach program and a series of public River Dialogues, in which we took people out on the rivers. It was our hypothesis that the River Dialogues had the potential to reconfigure the aesthetic perception of the rivers. The view from any one of the rivers reveals a striking recovery of the natural landscape at the level of the floodplain and on the surrounding steep slopes that line the river valleys,

while the view from the roads adjacent to the rivers still presents a predominantly post-industrial, architectonic aesthetic that separates the viewer from the river. The principle of this aspect of the project was that value and care are generated in direct relationship to experience, perception, and the potential for common interest. On the concept side, we decided we would stress ideas tied to the scientific field reports and innovative maps developed by experts during the project. These concepts when coupled with “on the water” experiences might result in new values.

### The Public Realm

In older theoretical texts, the public realm is a site of both spatial interaction and rational/convivial public discourse.<sup>8</sup> In more recent texts it is described as a site of ever-present conflict and struggle.<sup>9</sup> Following this literature, the public realm has three essential conditions: conflict, discourse, and consensus. Bent Flyvbjerg, who makes a link between Habermas’s position on rational discourse and Michel Foucault’s focus upon the dialectics of power, argues that, if the public realm is to actually function, there is a need to contest power, invest in discourse and stretch the creative potential of social consensus.<sup>10</sup> This was the second aspect of the intellectual framework that informed our methods.

Taking the role of project director, I developed an understanding of the infrastructure, regulation and oversight that should protect the integrity of waterways and enable best land use in Allegheny County. My partner and colleague Reiko Goto acted as creative director, with a focus upon the experience and representation of a recovering land-based ecosystem and forest cover. Through work with our institutional partners and with natural scientists, the project team<sup>11</sup> gained a collective understanding of the failure of infrastructure and regulation to protect the rivers and riparian forest ecosystems. We were interested in how the regulatory interests defined the problems and their potential range of solutions. Two things became clear as we familiarized ourselves with the project scope: there was no data available to inform decision-making,<sup>12</sup> and advocacy and support for the opportunity for clean water and recovering ecosystems in the region was essentially non-existent. Furthermore, land-use regulation was not taking into account the recovery of water quality and forest growth due to industrial downturn. This was an emergent/recovering landscape with long-term environmental and aesthetic potential, and that fact needed to be made known and acted upon. Natural ecosystems provide myriad benefits, cleaning air and water, absorbing excess nutrients, pollutants, and storm flows, providing habitat for urban wildlife, and adding diversity to the aesthetic experience of urban dwellers whose primary experience might otherwise be confined to the built environment and its (grey) infrastructure.

These were the fundamental points of public-realm engagement for the project.

The 3R2N project followed the methods of informed aesthetic interest, quantitative analysis, and creative intent developed at Nine Mile Run. The method was to respond to environmental issues by disseminating strategic public knowledge, providing an experience where that knowledge can reshape perception, and then capturing emergent values in strategic platforms for discourse. Strategic knowledge is information which, when carefully chosen and publicly distributed, can reinforce democratic process and transform the operative value systems that inform decision-making. In this case, the strategic information that was missing concerned water quality, forest cover, land use, and environmental protection. To fill the gap, the 3R2N team completed eighteen reports over the life of the project (fig. 1).

As at Nine Mile Run, we were interested in the culture, perception, and understanding of public space, as well as its relationship to nature and rivers in a post-industrial urban setting. The focus of this new work, however, was much broader: it included all the systems and resources that occupy a hydrological or ecological relationship to Allegheny County’s rivers and streams. The project laboured to understand and establish a quantitative scientific baseline for such systems for three reasons: first, baseline knowledge of environmental conditions would provide us with a yardstick for measuring improvement; second, in the act of establishing a baseline you can discover data that reveals opportunities and constraints that were previously invisible; and third, we saw the recovery of nature as an aesthetic act based upon experience processed within a framework of ideas informed by science. We sought to privilege natural (green) infrastructure and validate the remnant ecological systems that could be found in the region.

Our goal in 3R2N was transformation of waterfronts, stream valleys, and hillsides through creative discourse about the aesthetics of place, in terms both of the team’s method of social engagement and process of speaking, listening, and responding, and of the social and political responsibility for these dialogues and for the many plans, reports, and publications that the team developed to strengthen advocacy for nature in the region. The project team moved constantly over the five years to engage and assess over 250 miles of waterways. By comparison, our work on the Nine Mile Run watershed was intimate; the relatively small scale allowed us to work as artists in-residence. We were able to focus on the project-in-place and develop a deep dialogue with nearby residents for three years, with an onsite trailer open every weekend to provide outreach to community groups, schools, etc. We also conducted frequent community dialogue events both onsite and in community centres around the area. In contrast, 3 Rivers 2nd Nature was geographically expansive, and we

Figure 1. Year to year reports by 3 Rivers 2nd Nature on water quality, water, ecology, forest cover, geology, history, etc. 3 Rivers 2nd Nature, STUDIO for Creative Inquiry, Carnegie Mellon University.

knew we had to develop an alternative approach. We focused on two events a year, always in different communities, keeping pace with the science team moving through the region. Our goal was to initiate a dialogue with colleagues from non-profit organizations who had the potential and the interest to act over the long term in these areas. The program of River Dialogues, co-developed with our partners at Three Rivers Wet Weather, was designed as a migratory series of fast-moving dialogues with different people throughout the region, and as an alternative platform for discourse. We planned and organized four- to six-hour days where citizens and decision-makers assembled to hear an expert seminar about the rivers, then boarded large catamarans used as water taxis to experience and discuss the rivers. Upon return to the dock we would all eat together, then assemble around working tables for protracted, recorded, and illustrated conversations about a particular stretch of riverfront. Each table had a facilitator, a planner, a note-taker, and one or more drawers (who encouraged everyone to pick up pencils, pens, and markers) to unpack the day's experience and record the opportunities and constraints we saw as connected to the post-industrial use of our regional waterways and waterfront.

The records from those sessions appeared in our yearly reports, and became the basis for a river trail plan.<sup>13</sup>

## Process

The process of developing 3 Rivers 2nd Nature was tied to the partnerships and the funding that enabled the congregation of academic and professional talent that defined the project. Following an expansive proposal to the Heinz Endowments for a five-year project, the program was partially funded and initiated on 1 January 2000. Grant reports had to be filed at the end of each year, and a new grant proposal submitted each July for funding to continue the following January.

We were attempting to define a baseline of natural (green) infrastructure throughout Allegheny County that included its aquatic and terrestrial systems. As the project director, I outlined a set of general methods, then worked with fellow artist Reiko Goto, historian Prof. Joel Tarr, scientists Dr. Sue Thompson and Kathy Knauer, and landscape architect Suzy Meyer to find consensus on a scope of work for the project in its first year.<sup>14</sup> In the following year the botany and riverbank work was reviewed





Figure 2. Images from 3 Rivers 2nd Nature: the post-industrial condition—dirty water and aging industrial infrastructure; interested parties and potential advocates on the rivers and at the public design tables. 3 Rivers 2nd Nature, STUDIO for Creative Inquiry, Carnegie Mellon University.

and amended by Prof. Sue Kalisz, and integrated with a more rigorous geological approach by Dr. Henry Prellwitz and Dr. Roman Kyshakevych; they conducted the terrestrial studies over the life of the project. We engaged with colleagues in the sciences to conduct rigorous field studies to understand regional water quality and riverbank conditions (soils and trees). We worked with colleagues in planning and history to understand changes to property ownership, zoning, and regulation, as well as the historic shift from rivers as ecosystem-based resources to their development as transport infrastructure for barge traffic. Finally, we were interested in probing the regional potential to preserve and restore natural systems through citizen involvement in water quality testing and landscape assessment, adding a sense of democratic participation and transparency to the usual expert program of assessment in relation to regulation and enforcement. We sought to engage individual curiosity and care for a natural recovery of rivers and forests in order to build potential for dynamic public agency.

To accomplish our tasks we needed to enter into an interdisciplinary dialogue to establish a scientific protocol and then pursue it without significant change for four years until all the

data had been collected. Where Nine Mile Run was contained within a 6.5-square-mile watershed, Allegheny County is 730 square miles, a vast multi-municipal political entity comprised of many watersheds. Working on Nine Mile Run, we were focused upon two miles of open stream. In Allegheny County we were going to be working on 90 miles of rivers (180 miles of riverbank) and up to 2,000 miles of streams. We divided the 90 miles of riverfront into sections of roughly twenty-five miles and began the work to establish our data baseline. We focused upon terrestrial conditions (botany and geology) and water quality (aquatic life and pollutants) in and along the rivers and waterways. We were seeking to establish a baseline of knowledge that would allow interested parties (in the future) to ascertain if conditions were improving or worsening over time. We were also seeking to develop a program of aquatic-recreation and green-infrastructure planning concepts. These are ideas and areas that had been largely ignored by municipal interests, state agencies, and environmental non-profits that primarily saw nature as an ex-urban value.

Our methodologies included extensive data gathering to inform conceptualization—embodied and communicated as

“strategic knowledge”—as well as our series of intellectually and experientially informed River Dialogues, which would unfold each year in different places around the county (fig. 2). Through these two programs we believed that we could expand the concepts that frame perception and provide experiences that would lead to a discourse about access and support for nature as a primary condition of post-industrial redevelopment.

### The Means of Empowering Discourse

Our partnership with Three Rivers Wet Weather was arranged by the Heinz Endowments. I believe it was done with the intent to strengthen our political position and our efficacy amongst the decision-makers of the region. Three Rivers Wet Weather remains a federally funded non-profit institution developed through the collaborative efforts of the Allegheny County Health Department and the Allegheny County Sanitary Authority (Alcosan). These are two highly politicized and powerful public institutions; one is charged with environmental management of wastewater and the provision of sewer infrastructure, and the other with the protection of public health through regulation and enforcement of environmental issues. Three Rivers Wet Weather brokers agreements between the U.S. Environmental Protection Agency and the myriad local municipalities associated with the Allegheny County Health Department and the Allegheny County Sanitary Authority. The 3 Rivers 2nd Nature team entered into a relationship with Three Rivers Wet Weather with the intention to address questions of clean water and the preservation, conservation, and restoration of nature, but we would soon discover that our partners had limited interest in nature: from the beginning it was infrastructure first, with clean water and living rivers a distant second, and forested riverbanks a yet more distant third. Our partners were focused upon the politics and economics related to development of ex-urban and riverfront industrial properties and the challenges created by deferred maintenance of existing regional sewer infrastructure. Both elements were considered essential to growth and development; both elements would demand federal investment if they were to succeed. Federal interest was predicated upon clean water: this should have been the key leverage point for Three Rivers Wet Weather, but its political constituencies kept the focus on sewer maintenance and new capacity.

We soon understood that we needed to establish a separate basis of social and political strength if our voice was going to be heard. Our new strategy for 3R2N was to assemble a technical advisory team of some of the best and most open-minded thinkers from diverse disciplines and a range of academic, professional, and state institutions, including senior representatives from Three Rivers Wet Weather, Alcosan, and the Allegheny County Health Department, as well as experts from Carnegie

Mellon University, The University of Pittsburgh, the U.S. Army Corps of Engineers biology team, and the Pennsylvania Department of Conservation and Natural Resources. We believed that this technical advisory board would help us to refine our methods in the first year, and would become a foundation of social, political, and scientific strength that would be shared as we entered the more discursive elements of the program. We believed we had constructed an effective support network for introducing new knowledge that would improve the quality of discourse concerning the natural form (forested edge) and function (clean water and healthy fisheries) of the public realm in and along the rivers and waterways. In the following years, we added an outreach advisory board made up of regional environmental, community, and public policy advocates to further empower the process and enhance the potential outcomes of our program.

The project was streamed into research initiatives, focused respectively on water, land, and dialogue. The project team sustained three levels of discourse throughout the project. We had internal dialogues; these were critical but convivial conversations amongst like-minded academics in common, relatively balanced power relationships. We had dialogues with Three Rivers Wet Weather and its initiating institutions, based in convivial relationships but actually loaded with power issues, which forced us to rethink our strategy. At this point it was clear that our consensual ideal was lost, and the next step was to seek convergent alternatives. Third, we had dialogues with citizens where we spoke, we listened, and we recorded what they had to say, seeking input on their perception, understanding, and interest in post-industrial waterways. These public river and river-trail dialogues were negotiated with the support of a range of non-profit activist groups who gathered with the intent to act upon issues of common interest. Many members of the public returned for all four years of the program, creating a sense of fellowship amongst river advocates. We initiated two policy reports at the end of the project: the policy recommendations are now applied through the action of the non-profit partners that joined our outreach advisory board, organizations with the intent to produce change in the region. We also organized art-theory and practice dialogues, which we named the Monongahela Conferences, and finally, we brought in Grant Kester to curate the *Groundworks* exhibition in the fall of 2005. I will return to the overt art/cultural aspect of the project in a following section.

As stated previously, the plan of 3 Rivers 2nd Nature was to focus upon the idea of green-infrastructure—our forests, wetlands, streams and rivers—as the subject of integrated interdisciplinary analysis and public discourse. Our work was intended from the start to reveal and enable desire for nature- and water-based experience and interaction in the region. The team had a clear understanding that recreational desire was in conflict with

both current environmental management practice and industrial transport usage. The 3R2N studies revealed significant water quality issues in relationship to parks and recreational boating facilities. The Port of Pittsburgh was continuing to develop new dams and projects to promote multi-barge transport and higher rates of throughput for its lock and dam systems. In light of this, we provided a set of public advocacy tools that would help any interested citizen to develop an appropriate argument and action plan, and would contribute in a larger sense to the function and discourse, the desire and the conflict, which are typical of the post-industrial public realm.

On one level, we saw the rivers and the burgeoning forests as a natural aesthetic opportunity wrapped in a complex socio-political problem. We saw the aesthetic condition of the rivers as one of ill health. The challenge was to reveal the actual unhealthy condition of the rivers, clarify the range of potential responses to the pathology, and initiate and sustain a culture of care. The land-based research initiative was another matter: in the case of the forests, a miraculous natural recovery had occurred. The question in that case was to identify any social and political actions that might undermine that recovery and to develop a creative response to those potential challenges.

The three rivers shape the environment as well as the patterns of human habitation and movement and the resulting day-to-day aesthetic of the place. Furthermore, they are both the source of drinking water and the receptacle of municipal and industrial waste, and we can discuss the relationship of the health of the object (the rivers) as a fundamental condition of the health of the subject (the residents). In this way the traditional subject-object separation is bridged (following Berleant, 1992) and the moral and ethical becomes embedded in the formal, material, and physical properties of aesthetic judgment. The questions the project raised about the rivers and forests link into the discourses typically found in public realm literature, as well as to issues of environmental aesthetics and ethics.

The 3 Rivers 2nd Nature project can be characterized in different ways. When we were speaking to artists, we would explain that we developed a process of discourse and tactical analysis that resulted in strategic knowledge and platforms for discourse. We supported that process by developing images, concepts, and narratives that described the potential for aesthetic evolution and a devolution of primary creative authorship to enable the creative acts of others over the course of the project. As the content became more focused, our grasp on it weakened. Actual material outcomes would develop after we vacated the project. Our interest in concepts (data) and the empirical experiences that inform perception create the basis for new metaphors and social narratives to take hold. They have the potential to provoke social and political interest that leads to physical change. In discussion with artists, the practical elements of the work are

often challenged. In discussion with planners, the question is how applicable the work might be, and what resources are available to realize the ideas. In discussions with decision-makers, it is the claim to fact, or truth (most often through science), that is the path to validity and potential contribution.

## Water

The water project was set up with scientific oversight and planning, and supported by Three Rivers Wet Weather. We developed a dry-weather and wet-weather database. We sampled at key points in the rivers during dry weather when water quality was assumed to be good, and in wet weather when sewers were known to be overflowing and water quality was assumed to be bad. With the support of our partners at Three Rivers Wet Weather we were able to sample for physical chemistry, the capacity of water to support life, and pathogens as indicators of sewage. We sampled the rivers and the mouths of all fifty-six streams in the county—by travelling in and climbing up each streambed to the first riffle pool, to be above the contaminating backwater from the rivers. We also hired a team of biologists to conduct an ecosystem study of the streams.<sup>15</sup> Our testing in dry weather showed clean water in the rivers but many significant issues in streams, even though the streams were more ecologically viable than had been thought. Indeed water quality in some of the streams sampled was worse than in the rivers in wet weather. This was a fundamental finding, as the region has 62 streams that run through neighbourhoods, parks, and open spaces; areas that children and recreating adults regularly have contact with in dry weather. As a result we thought this finding would reshape the “wet-weather” problem statement of Three Rivers Wet Weather and of the state and federal regulators. What we discovered instead was that where science was often the privileged language of the discourse, it was just as often biased and at times simply ignored, roundly questioned, or buried through legal action. What we thought was a simple contribution of rational and strategic knowledge was tied up with complexities of power, authority, and political control of the content and the context of the discourse. Admittedly, rivers and streams are a difficult laboratory. The natural conditions of weather and flow, access, and sampling methods make it difficult to control experiments, which open the authority of the scientific method (invested in control and replication) to a never-ending series of challenges and questions. This was further complicated by legal oversight of the data and control over its distribution with the intent to limit federal regulation and enforcement. In January 2003, I wrote “Information and Authority: The Perception of Water Quality” (Collins, 2003) to provide a general overview of these scientific, political, and public realm issues attached to water in the region. I presented an illustrated version of the pa-



per to a local regional engineering conference. A year later, the issues raised in that text became a focus of a request for funding when I used excerpts from the paper to make an argument to bring academic attorney William J. Luneburg Jr. into the project. His work with us resulted in the white paper “Where the Waters Converge.”<sup>16</sup> It analyzes the local, state, and federal system of regulation and enforcement for its lack of regional efficacy, and recommends alternatives used in other areas of the United States, options that would effectively diversify the range of voices and interests within the regional discourse.

John Schombert, Executive Director of Three Rivers Wet Weather, describes the issues: “I agree that water data and other performance data should be in the public domain, but it is unlikely that public facilities will want to deposit their data in a system that is maintained by the Riverkeeper concept.”<sup>17</sup> (Riverkeepers are part of a national effort initiated by Robert Kennedy Jr. in which individual citizens become public advocates for particular bodies of water.) In other words, public officials fear that environmentally motivated interests could use this data in legal action at the state and federal level. In this case “Riverkeeper” has become a straw man for the dominant institutional position. The broader regional issue can be described in terms of the lack of action on the part of local and state regulators (they do not enforce). While the federal government may take legal action against the sewer authority and all the smaller municipalities, the municipalities defend by not collecting data, or if they do collect, they release no data. Everyone is complicit and complacent, and as a result there were no changes in regional water quality. The 3 Rivers 2nd Nature water quality database was the most widely referenced water quality database in the region; yet, neither the state nor the federal government would accept that data into public databases.

## Land

Our land-based activities began with a focused four-year study of river-edge conditions. Where the water team faced conflict throughout the program, the land team found their process and outcomes to be no cause for contention among institutions or the public. More often than not, the work was accepted as an inspirational rallying point that opened a sense of regional opportunity. During our River Dialogues, the presence of forest cover and our ability to describe it and locate it in great detail was of much interest. Photographs of forested sites and large trees elicited a sense of pride and wonder at the resilience of nature. The impact of these studies and the confirmation of a nascent idea of recovery were reinforced by the experience of being out on the river, which gave the sense of an open space framed by trees on the banks and steep slopes beyond; it was a point of significant interest for all involved. From the river, an

image of ecological recovery was a salient counterpoint to the post-industrial dereliction that was so obvious from the roadways. In the end, primary citizen input to our land initiative was in relationship to the river trail plans and to issues of access and egress from land to water.

In 2000, a collaborative interdisciplinary team led by an artist (Goto), and including a botanist (Prof. Sue Kalisz) and a geologist (Dr. Henry Prellwitz), began ongoing work on this land-based initiative. The team focused upon the acquisition of images and information about river-edge forest cover and bank slope and berm conditions. Our goal was to provide a scientific overview of forest tree species, forest density, and the dominant plant community, as well as a review of invasive plants and desirable wetland indicator plants (since wetlands can be protected through delineation and federal government legislation). A geology study of berm (the edge formed by normal low water) and bank (the edge formed by high water/flood) conditions and materials complemented the botany. Ultimately the team wanted to understand soil/forest relationships and to be able to provide guidance on areas worthy of preservation, and on patches and corridors deserving of conservation interest or with significant restoration potential.

This team was providing important new geo-referenced information about natural systems that were under development pressure. To understand the scope and scale of this effort, the riverfront was broken up into 1/10-mile increments on a computer (GIS) map file that was downloaded to a global positioning system (GPS) receiver. In a boat, with the receiver in hand, we made two to three very slow passes along each section of the shore to get all the necessary information for the database. Wherever bank berm/slope conditions changed, or forest typology was difficult to identify, the shallow-draft boat would be beached so that further inquiry and physical samples could be taken. The terrestrial team worked on fifty miles of riverfront each summer, for a total of 200 miles over four years. The resulting database would inform municipal land-use controls, development interests, landscape design, and the work of activists interested in promoting the protection of natural systems. In the fourth and fifth years of the project, we developed a series of GIS studies to ascertain the relationships of existing forest cover to watersheds, steep slope lands, municipal boundaries and zoning, areas of economic need, areas of open space need, and connections to the river-edge conditions mapped previously. We were trying to get a sense of the scope and scale of remnant and recovering forests throughout Allegheny County, as well as the social and political conditions that might drive change.

We hired Jonathan Kline, an urban planner, and Kostoula Vallianos, an environmental planner, for these final two years of the project; they began working closely with us to review our

theories and methods of landscape ecology analysis. We were particularly interested in the work of landscape ecologist Richard T. T. Forman; he had developed a “patch-corridor matrix” concept in his text *Land Mosaics*<sup>18</sup> that had enormous potential for application in the remnant forests of the region’s stream valleys and the recovering steep slope river corridors. Working from his treatise and from an existing GIS forest cover package, we were able to develop a process that was adjusted for, and useful in, an urban condition. We wanted an analytical method that would explicate the recovering forest conditions and give us a sense of the cause and effect of management action. We ran GIS studies that told us about the places where forest cover was healthy and areas where forest cover was poor. Furthermore, the work helped us characterize places like the economically deprived Monongahela River Valley, where huge swaths of forests and steep slope lands revealed remnant or recovering forests. When we analyzed the map for the amount of parkland and managed open space per person in each watershed area, the Monongahela River Valley was in the lowest percentile. The questions that arose were: Who owns this forested land, and could it be preserved, conserved or restored in any way? How could or would low-income communities benefit from a new public space opportunity?

By 2004, we had completed a significant series of map analyses. Using the watershed systems as our primary spatial framework, we ran studies on the remnant and recovering ecosystems of the region, as well as on the social and natural configuration within the region. We wanted to find out who benefited from what and why. We also ran a study on regional zoning, trying to understand if the policies of the day either enable or constrain natural recovery. We had hired a recently retired university law professor, Cyril Fox, who focused on land use and environmental law. We began a series of discussions with him about zoning, mapping, and the levels of ecosystem study that had been undertaken. At this point we had integrated the studies of forest cover and geology along the riverbanks, the bio-assessment of streams, and the watershed-based GIS mapping project into one single map database. We spent a month or so in meetings discussing the content and its application in a planning and policy context. The attorney began to draft an outline with us. We finally settled on a program of analysis that would provide a one-stop shopping list for anyone interested in land-use intervention. After almost eighteen months of development, our report, “Ecology and Recovery Allegheny County,” was published by the STUDIO for Creative Inquiry in early Spring 2006.<sup>19</sup> The intent of the report was to examine, value, and rank the remnant and recovering forest ecosystems that support the natural health of the rivers and streams of Allegheny County. To activate that knowledge, we analyzed techniques for preserving, conserving, and restoring

these systems through both scientific and political methods. Two of our outreach advisory board members, representatives of the Allegheny Land Trust and the Pennsylvania Environmental Council, are currently using the report as a reference and a guide for conservation project development. (The GIS map data is now in the PA Spatial Data Access website, <http://www.pasda.psu.edu>.)

In April 2004, we had also received a call asking if we could apply our work at a tighter scale within the City of Pittsburgh, collaborating with the Perkins Eastman Architecture firm and Allegheny Land Trust to look at steep slope land and zoning. This “Hillsides Project” was a fast-track effort. The controversy that initiated it began when zoning once used to protect hillsides land was being changed to enable development. The changes and new plans were promoted by the Urban Redevelopment Authority of Pittsburgh for new development on steep forested slopes on Mt. Washington. In response, a group of citizens, led by Lynn Squilla and the Mt. Washington Community Development Corporation, wanted to protect that land as open space, and decided to mount a challenge. With a member of Pittsburgh City Council ready to act on the ordinance, this politically powerful citizens’ committee prepared to make a recommendation to City Planning. Initially, 3R2N resisted taking on this work, feeling it was too political and too applied, but then decided to go ahead, with the intent to exploit the project’s potential to build systems for democratic discourse about land use. In an odd turn of events, the Perkins Eastman team elected to go with a more empirical urban design-based argument while our artist-led ecology team went with a carefully argued objective position based on quantitative data reinforced by a legal argument. Our goal was to make a case for a zoning change that would protect steep slope lands. The artists, the architects, and most of the scientists agreed that the question was essentially an aesthetic one, but the geologist got us talking about landslide-prone soils. The attorney assured us that a zoning code written on the basis of public safety (due to the potential for catastrophic failure and landslide) was an ironclad legal argument. The result of the Hillsides Project was a pair of concurrent reports rather than a single report, synthesized by a legal overview by the 3 Rivers 2nd Nature land-use consultant. In the end, the two reports provided essential and complementary results.

The Hillsides project was difficult, the time period was challenging, and the work was intensively interdisciplinary, multi-institutional and dialogic, but we were rewarded for our efforts. The Hillsides citizens’ committee made their own recommendations (based on our study) to City Planning, and the proposal was put forth for approval by City Council in August 2005. Although blocked initially by the Urban Redevelopment Authority, the proposal finally passed, and the first steep slope



city park was established in December 2005. More land was added to the park in March 2006, and eventually these initiatives became part of a full-scale park.<sup>20</sup>

## Dialogue

Our interest in 3R2N and the Hillside Project (and our potential contribution) was always to move public discourse from divergent and inchoate forms towards clarity and focus. This was tied to a sense of intentional responsibility, which was both the strength and the point of critical weakness in the work when examined as art.<sup>21</sup> In 2002, we began planning for a series of dialogues with our regional colleagues—artists, environmentalists and those who seek change—to help us clarify and better understand the meaning, form, and intent of creative agency in large-scale transformative art practices. We also wanted to serve our area of art practice. Following our dialogic model, we wanted to arrange opportunities for discourse, carefully record that discourse, and then provide public feedback in the form of Internet or text-based publications. Finally, we wanted to ratify the import of this work through an exhibition. An initial grant proposal to the Pittsburgh Foundation resulted in funding for the creation of a “social sculpture,” a closed seminar, and two public lectures (the first by Platform London members Dan Graham and Jane Trowell, and the following night a dialogue between Suzi Gablik, Grant Kester, and Malcolm Miles). The seminar was intended to encourage creative social-political engagement in the Beuysian tradition. This event, the 2003 Monongahela Conference, was followed by a larger proposal to bring groups of artists into Allegheny County for a period of a month or more in the 2004 Monongahela Residencies. The final event, *Groundworks*, was an exhibition of transformative artwork from all over the world. It was complemented by the 2005 Monongahela Conference, which opened the exhibition.

For the 2003 Monongahela Conference, we gathered twenty participants to discuss the intent, methods, and means of this area of practice. The entire 3 Rivers 2nd Nature team got involved in identifying artists and theorists and reviewing documentation of their best work and its relationship to social and environmental change. Artists were chosen for their ability and previous success in working with others. The conference was an experiment; it provided a seminar environment that would allow us to learn from one another. We also spent a brief amount of time exploring small post-industrial river towns in the Monongahela River valley: Braddock, Homestead, and McKeesport. We knew that the artists and theorists identified for participation in this conference had unique and divergent practices, yet we believed they shared basic commonalities. First, we assumed a common philosophy of commitment to change and a common interest to apply theory in transforma-

tive practice. Second, we assumed that they would be willing to discuss the practical application of art processes and practices. In the first day we were interested to see presentations of their work and to hear answers to questions such as: How do you do your work, and what are the goals and intentions? What are the methods and means you use in your work? What do we as ecologically and socially minded visual artists bring to an urban place that reveals, enables or initiates change? In the second and third days, we were hoping to find some clarity in the way that these transformative practitioners influence and act upon public places and public discussions. We put forth the goal of assembling a transformative practices toolbox that might promote and guide transformative practices. Finally, we were interested in a closing discussion about externalizing creative authorship. The complete record of the first Monongahela Conference, including all the participants’ papers as well as detailed notes and my final synthesis can be found at <http://moncon.greenmuseum.org/index.htm>.

The 2004 Monongahela Residencies were intended to insert artists into three communities that had been severely affected by the economic downturn and the long-term social impact of the post-industrial economy. To support the artists’ work, the entire 3 Rivers 2nd Nature team reconfigured their roles and their office equipment to provide three public studios for research, outreach and project development. I elected to provide cross-project support, Reiko Goto joined one of the teams, and our research associates—Noel Hefelee, an artist, and two architects, Priya Lakshmi and John Odureo—became site managers. In addition, we hired a young landscape architect to help with design, and two recently graduated artists who had a proven ability to organize, develop, and promote public meetings and events. Each studio was set up with the complete 3 Rivers 2nd Nature database, image store, and contact list. Each site had computer support, mapping software, a printer, a digital camera, Internet, telephone, and various analogue office and creative production support systems. The landscape architect and outreach coordinators were on call and available to each office with some advance planning. We spent months preparing this infrastructure and developing human resources to enable the success of the artists. As we developed the plan for the residencies, the question from many in the communities was, how much time would the artists spend and how serious would their commitments to these places be? Our response was to tell the truth, to reveal the scope of the funding and the contractual requests for the artists’ time, and to make it clear that the budgets would likely allow for nothing more than an opportunity for discussion with these artists interested in collaboration, social creativity and change, and that perhaps some illustrated ideas (concept plans) would result. From our point of view, the questions were: Could the unorthodox potential of art create a small

breach in the day-to-day realities of life in these places? Could the artists help initiate or develop a creative nexus in these communities? We intended a process of engaged creative dialogue that inspired people.

During the month of June 2005, twelve artists, designers, and architects were placed as artists-in-residence in Braddock, Homestead, and McKeesport in the expectation that they would generate public discussion about the relationships among cities, nature, regeneration, and social/environmental change. To prevent this from becoming merely another project where artists parachute in and then out with their fee in hand, we placed each artist from outside the region with a recognized regional practitioner, and we also worked closely with public officials, non-profit agencies, and interested parties that saw the benefit of having artists in their midst. Seven of the twelve artists came from outside Pennsylvania to work alongside five artists living in the region. The artists were given one task: to initiate change. The artists and 3 Rivers 2nd Nature team members worked from a library, a storefront, and a municipal office five days a week. Each Friday we hosted a project dinner, followed by a public lecture-discussion about the issues the artists had become involved in. Municipal officials and citizens were always invited (and did attend) these events.

The 3 Rivers 2nd Nature research assistants ably facilitated the artists' work, helping to set up meetings with citizens and officials, planning travel, site tours, and boat tours. They also provided in-depth support in computer mapping, design, and photographic rendering. As the residencies unfolded, the artists from out of town created excitement, and the artists from within the region gave the local citizens and leaders confidence that commitment was being brought to the work. All of the artists went well over their paid time to do this work. However, it should come as no surprise that there was a range of outcomes in the end. Some artists simply moved in and out of the work, their lives complicated by other projects, teaching, or personal issues. Many, however, remain in dialogue at various levels of interest even today. A few have sustained a deeper interest and are seeking long-term working relationships. They continue to seek possibilities for funding, and an opportunity for further engagement.

The *Groundworks* exhibition and 2005 Monongahela Conference were the final steps in the project. Curated by Grant Kester of the University of California, San Diego, the exhibition was planned with the intent to recognize international modes of environmental practice and aesthetic experience. Kester's interest, as revealed in his essay for the *Groundworks* catalogue,<sup>22</sup> was focused upon the history and theory of human relations and the creative potential that lay within a discourse that was both critical and convivial. Four additional authors wrote for the catalogue,<sup>23</sup> including Maurine Green-

wald, who provided an overview of Pittsburgh's environmental history and of the role of artists in that history. Andrew Light, an environmental philosopher, provided a social and political overview of environmentalism before focusing in on his interest in the ethics and process of interrelationships between people and ecosystems. Maria Kaika, an urban geographer, discussed the nature/city dualism pervasive in Western culture, then focused upon nature, cities, questions of power, and the production of better concepts of environment through lived experience. Malcolm Miles offered a green aesthetic based in a mixture of theoretical propositions from Kant and the Frankfurt School.

The exhibition was set up in the traditional gallery format to allow viewers to compare, contrast, and synthesize ideas about the work. It covered three floors of the Miller Gallery at Carnegie Mellon University, offering a visual overview of fifteen major collaborative projects from around the world. Eight additional new-media works were presented in a ground-floor media centre. Seven of the projects were presentations by artists involved in the previous Monongahela Conferences; this was to be the culminating presentation of their efforts.

Our two-day conference followed the Friday night opening of the exhibition. Keynote speaker Tom Finkelpearl, author of *Dialogues in Public Art*,<sup>24</sup> started off the conference program with a discussion of art and citizenship. Then, artists from all over the world talked about their projects, the issues that initiated their creative engagement, and the processes and methods that they brought to the desire, as well as the need to respond to those issues. Rafael Santos, speaking as a member of Ala Plastica in Argentina, explained the context and the impetus for the group's work in the need for the recovery of public space after two decades of military control, and focused on their efforts to achieve new public realm equities as well as ecological sustainability. Discussing his work on the Monosegawa River in Japan, Ichi Ikeda offered a unique and visually stunning approach to public dialogue about water and society. This provided a potent counterpoint to Helen and Newton Harrison's provocative proposal "Fecal Matters," an innovative and bold alternative stormwater system they had designed for Braddock and North Braddock, Pennsylvania. Navjot Altaf's work in India focused upon developing a discourse of design and interaction between and across communities of people separated by a historical caste system; she provided a view of art, culture, and environment that was local, oriented towards the feminine, and responsive to need. There was a clear parallel between the work done in McKeesport, Pennsylvania, by Jackie Brookner, Stephanie Flom, and Anne Rosenthal and the work done in Elkhorn City, Nevada, by Suzanne Lacy, Susan Steinman, and Yutaka Kobayashi. Overall, the conference provided an important sense of shared contextual consciousness, clarifying the commonalities of our



Figure 3. The Monongahela Conference Programs: Grant Kester provides the closing keynote for the 2005 conference, Friday-night dinners, and public meetings from the Monongahela Residencies; and the Greenmuseum website/archive from the first Monongahela Conference. 3 Rivers 2nd Nature, STUDIO for Creative Inquiry, Carnegie Mellon University.

place-based interests and practices yet recognizing the significant differences and challenges when you look at this work as an international field of practice, functioning in situ without significant institutional presence.

Grant Kester closed the event with an overview of his understanding of transformative practice and its ideals. Sketching out the history and the current theoretical struggle over the validity of this work, he described the work as an essential meta-institutional response to those things that the state and market simply do not attend to, in places where artists choose to initiate and carry out their work (fig. 3).

## Conclusions

In the process of developing 3R2N, we confirmed that intimate proximity, experience, and relationship to rivers, land, and natural systems were essential if people are to gain a sense of the value and aesthetic interest of these systems. For those who enjoy intimate and regular experience, this was easily understood. However, the complexity of systems and phenomena affecting

water and forests are less well understood. I would argue that problems that constrain the opportunity of natural systems in an urban setting cannot be defined by science alone. Sewage indicators can be defined by science, but to define the larger systemic issues requires an interdisciplinary effort. To realize the scope of the post-industrial opportunity, a re-valuing and re-mapping of nature must occur. While replicable fact is the domain of science, human perception, and value are the domains of art and the humanities.

Our project team was consistently able to engage citizens and activists on the broader realities of these issues through dialogue and through the inter-subjective experiences of the boat tours. We found that there was shared empathetic insight amongst many involved (even those that opposed us) once the issues and opportunities were clarified. While there was not always agreement on direction, the individual care for the resource was quite inspiring and consistent. However, the institutional and municipal interests that control the regional water policy discourse remain invested in defensive legal positions and therefore, there was political and economic stasis.



There was no sense of responsibility for the failings of the sewer and stormwater systems or the lack of transparency or access to information through public institutions in Pittsburgh. In the last discussion I had with the assembled members of this dominant group of institutions, I asked what would break the stasis. They all claimed that the federal government was going to have to pay before they would take any significant movement towards change.

The body of work discussed here was intended to test transformative methodologies in art practice. We were working within a funding structure that expected new knowledge to be coupled with strategic and effective outcomes, and we had to delve deeply into the system if there was to be any hope of achieving these outcomes. While this artwork builds upon thirty years or more of relevant histories,<sup>25</sup> the lack of material product, the complexity, the scale, and the focus on process demand extended attention from anyone that wants to fully understand the work. If you were a young academic, or an art critic with a reputation to defend, you would not likely see an immediate return for an interest in this area of practice. Most who engage the work initially are somewhat overwhelmed with the challenge of what to focus upon and which history to apply in order to test its mettle. And, of course, the art world still functions primarily in relationship to objects and the institutions that contain them. As a result, I believe this work will retain a sense of otherness for decades to come.

In hindsight I understand that consensus can only be achieved amongst those who are willing to commit time and attention to a specific issue. At Nine Mile Run, the majority of our community advisors found consensus on a new opportunity, with only one group holding out for political reasons beyond the scope of the design. At 3R2N the challenge was broad in scope and scale, so the approach to the opportunities of clean water and forested valley and flood plains was through an iterative and convergent process that led to tactical insight resulting in exhibition, a public database, and strategic white papers. While the conflict was at first disappointing, Flyvbjerg's critical approach to the Habermasian ideal and to Foucault's attention to power proved very useful and helped us find a way out of what felt like a disappointing end at the time. The work was fully embraced by the Allegheny Land Trust and various other interests that put the work to good use; two years after we left the GIS database was finally released by Allegheny County Planning and it was placed on the PASDA public website. In 2009 one of the Monongahela Conference participants, landscape architect Walter Hood from U.C. Berkeley, was brought out to plan an important new hillside public space in a low-income neighborhood just above downtown Pittsburgh through the efforts of our friend and colleague Denys Candy and his Community Partners Institute.

Arnold Berleant's work continues to provide a foundation in the work of both primary investigators. Reiko Goto and I find the move from separation from nature and environment to integration to be a powerful idea that reshapes the envelope of our reality. In my case, I am thinking about small contributions to the emancipation of people, places, and things. In Reiko's case, she is thinking how one might see oneself in empathetic response to all things. I come away from this work with an emergent sense that her insight may prove to have more strategic depth than my own, and real potential for the realization of the aesthetic-ethical impulse to integrate with nature. This twinned pursuit of an ideal is the value and the roadmap of this collaborative partnership.

## Notes

- <sup>1</sup> The project philosophy and other relevant documents such as "Ample Opportunity a Community Dialogue" which includes discourse analysis are still available at <http://collinsandgoto/NMR>.
- <sup>2</sup> J. Habermas, *The Structural Transformation of the Public Sphere*, translated by H. Burger (Cambridge, Mass., 1989); M. Warren, "The Self in Discursive Democracy," published in *The Cambridge Companion to Habermas*, ed. S.K. White (New York, 1995); R. Sennett, *The Fall of Public Man* (New York, 1987).
- <sup>3</sup> S. Gablik, *The Reenchantment of Art* (New York, 1991); S. Lacy, *Mapping the Terrain: New Genre Public Art* (Seattle, WA, 1995); H. Stachelhaus, *Joseph Beuys* (New York, 1987).
- <sup>4</sup> W. McDonough, "The Hannover Principles," published electronically at [http://minerva.acc.Virginia.EDU/~arch/pub/hannover\\_list.html](http://minerva.acc.Virginia.EDU/~arch/pub/hannover_list.html) (1992).
- <sup>5</sup> A.D. Bradshaw, "Goals of Restoration," published in *Restoration and Recovery of an Industrial Region*, ed., J.M. Gunn (New York, 1995).
- <sup>6</sup> Arnold Berleant, *The Aesthetics of Environment* (Philadelphia, 1992), and *Aesthetics and the Environment, Theme and Variations on Art and Culture* (Williston, Vt., 2005); Emily Brady, *Aesthetics of the Natural Environment* (Edinburgh, 2003); Malcolm Budd, *The Aesthetic Appreciation of Nature* (Oxford, 2003); Alan Carlson, *Aesthetics and the Environment: The Appreciation of Nature, Art and Architecture* (London, 2000), and *Nature and Landscape: An Introduction to Environmental Aesthetics* (New York, 2008); Marcia Mulder Eaton, *Merit: Aesthetic and Ethical* (Oxford, 2000).
- <sup>7</sup> Berleant, 1992, 60.
- <sup>8</sup> Hannah Arendt, *The Human Condition* (Chicago, 1958); Jurgen Habermas, *The Structural Transformation of the Public Sphere*, and *Moral Consciousness and Communicative Action* (Cambridge, MA, 1992); Henri Lefebvre, *The Production of Space* (Oxford, UK, 1991); Malcolm Miles, *Art Space and the City: Public Art and Urban Futures* (London, 1997), and *The Uses of Decoration, Essays in the Architectural Everyday* (West Sussex, UK, 2000).

- 9 Rosalyn Deutsche, *Evictions: Art and Spatial Politics* (Boston, 1996); Ernesto Laclau and Chantal Mouffe, *Hegemony & Socialist Strategy: Towards a Radical Democratic Politics* (London and New York, 1985).
- 10 Bent Flyvbjerg, "Empowering Civil Society: Habermas, Foucault and the Question of Conflict," in *Cities for Citizens*, eds. M. Douglass and J. Friedmann (West Sussex, UK, 1998). In *Making Social Science Matter* (Cambridge, UK, 2001), Flyvbjerg qualifies his position arguing that Habermas's ideals of discursive democracy, the setting in which this discourse can emerge is based upon standards and sanctions of power. In light of this he believes that democracy guarantees a public, but not public consensus. This is counterpoised by Foucault's belief that freedom is tied to the power surrounding the status of truth and its social political impact. Flyvbjerg concludes that while the Habermasian ideal is important, it is a Foucauldian framework of questions concerning: local power relations, the active exercise of power, and how have links between power relations made some things possible and others impossible (pp. 92–128).
- 11 The project team included artists, architects, lawyers, and scientists. See this link for an overview: <http://3r2n.collinsandgoto.com/artists-and-rivers/team/index.html>.
- 12 The actual Alcosan Long Term Control Plan was never released publicly; a critical response to that plan and its presumptive basis for investment was previously held on the environmentally active Ross Township website.
- 13 Available online at <http://3r2n.collinsandgoto.com/revalued/water-trails/index.htm> (accessed 27 May 2010).
- 14 Through unexpected shifts in primary employment, the science team changed in 2001. Dr. Thompson left the Carnegie Museum of Natural History. Suzy Meyer, a landscape architect, returned to private practice. Environmental scientist Kathy Knauer was 3R2N consultant for the duration of the project.
- 15 Despite significant impacts from sewage and in some cases acid-mine drainage, our ecology team proved that the streams were more ecologically viable than anyone had thought. This work was conducted by Michael Koryak, Linda J. Stafford, and Rosemary J. Reilly, a group from the U.S. Army Corps of Engineers—biologists who are considered to be nationally recognized regional experts. Michael Koryak was also a member of our technical advisory board.
- 16 William V. Luneburg, "Where the Rivers Converge: Unassessed Waters and the Future of EPA's Total Maximum Daily Load Program—A Case Study," *Journal of Law and Commerce* 24, no. 1.
- 17 G. Feller and J. Feller, "Lessons from Pittsburgh's Water and Sewage, Crisis," in *Cities on the Rise: Lessons in Becoming Sustainable* (San Rafael, California, Urban Age Institute, 2006), [http://www.urbanage.org/usi/docs/USI\\_Cities\\_on\\_the\\_Rise.pdf](http://www.urbanage.org/usi/docs/USI_Cities_on_the_Rise.pdf) (accessed 18 June 2006), 65.
- 18 Richard T.T. Forman, *Land Mosaics: The Ecology of Landscapes and Regions* (Cambridge, UK, 1995).
- 19 Available online at, <http://3r2n.collinsandgoto.com/revalued/ecology-recovery-allegheeny-county/index.htm> (accessed 27 May 2010).
- 20 Roy Kraynyk (a partner in the project) is Director of the Allegheny Land Trust (ALT) and provides details on the project at [http://alleghenylandtrust.com/home/news\\_arch/PARKS.html](http://alleghenylandtrust.com/home/news_arch/PARKS.html) (accessed 27 May 2010). You can also find the full text of the "Ecological and Physical Investigation of Pittsburgh's Hillsides" report as well as links to the new "Grandview Scenic Byway Park" on the ALT website.
- 21 Much critical thinking and writing about art continues to insist upon the autonomy of art and the intent for the work to refer only to itself; the formalist aesthetic is held obsessively distinct from both knowledge and action.
- 22 Grant Kester, ed., *Groundworks: Environmental Collaboration in Contemporary Art* (Pittsburgh, Regina Gouger Miller Gallery, Carnegie Mellon University, 2005).
- 23 Maureen W. Greenwald, "Ecological Art and the Pittsburgh Region's Environmental History and Culture," 36–47; Andrew Light, "Environmental Art and the Recovery of Place," 48–57; Maria Kaika, "The End of 'Pre-Modernity': Nature as Progress's Frontier," 58–67; and Malcolm Miles, "A Green Aesthetic: After Kant the Deluge," 68–79, all in *Groundworks: Environmental Collaboration in Contemporary Art*, ed. Grant Kester.
- 24 Tom Finkelpearl, *Dialogues in Public Art* (Cambridge, MA, 2000).
- 25 There are a number of histories of art relevant to this practice. I would argue that John Beardsley's *Probing the Earth: Contemporary Land Projects* (Washington, D.C., 1977), Lucy Lippard's *Overlay* (New York, 1983), and Suzi Gablik's *Has Modernism Failed?* (New York, 1984) are key points of historical reference. More recent texts include: Max Andrew, ed., *Land, Art: A Cultural Ecology Handbook* (London, 2006); Jeffery Kastner and Brian Wallis, eds., *Land and Environmental Art* (London, 1998); Heike Strelow and Vera David, eds., *Herman Prigann—Ecological Aesthetics: Theoretical Practice of Artistic Environmental Design* (Berlin, 2004). Also, the following critical analyses are related to specific curated exhibitions: Lucy Lippard, *Weather Report*, exh. cat., Boulder Museum of Contemporary Art (Boulder, Colorado, 2007); Barbara Matilsky, *Fragile Ecologies: Contemporary Artists' Interpretations and Solutions*. (New York, 1992); Sue Spaid, *Ecovention: Current Art to Transform Ecologies* (Cincinnati, 2002); Stephanie Smith *Beyond Green: Toward a Sustainable Art* (Chicago, 2005); and Heike Strelow, *Natural Reality: Artistic Positions Between Nature and Culture* (Stuttgart, 1999).