Remediation by Inspiration: Artist-driven models for environmental clean-up

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Submitted to the Department of Urban Studies and Planning
in partial fulfillment of the requirements for the degree of

Master in City Planning

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2011

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Submitted to the Department of Urban Studies and Planning
on May 18, 2011 in Partial Fulfillment of the Requirements for the Degree of
Master in City Planning

ABSTRACT

While often seen as utilitarian and technical, environmental remediation efforts have significant cultural, social and physical impacts. Accordingly, they demand responses that utilize a multi-disciplinary approach to the cleanup. The twelve case studies explored in this thesis represent examples of artists taking on leadership roles in environmental remediation projects as part of their artistic practice. The cases represent a unique type of public practice operating at the margins of aesthetics, science and public engagement. An examination of the details of these cases and their categorization along broad themes reveals lessons on where such an approach can be most effective and how, through interdisciplinary efforts, the practice of artists, planners, engineers and designers can be expanded to address the complex layers of environmental remediation. I conclude with seven factors that must be considered if such a model is to gain traction, including, but not limited to: the capacity for leveraging diverse funding sources, the need to acknowledge the professional uniqueness of artists, and the importance of public sector support. These factors point to a set of policy suggestions to help promote areas and approaches for successful interdisciplinary environmental remediation projects in the future.

The case studies are organized under four categories. "Artist-led remediation" cases include *Spoils Pile Reclamation Park* (Helen and Newton Harrison, 1976-1978), *Twin Stupas* (Angelo Ciotti, 1987-1996), *Wheatfield—A Confrontation* (Agnes Denes, 1982), *Veden Taika (The Magic of Water)* (Jackie Brookner, 2006-2009). "Post-facto artist engagement" cases include *Byxbee Park* (Peter Richards, Michael Oppenheimer, George Hargreaves, 1988-1992), *North Waterfront Park Master Plan* (Richard Haag, John Roberts, Agnes Denes, 1989-91), and *Wingfield Pines* (Allegheny Land Trust, Angelo Ciotti, 2001-2010). Cases where there is an "artist as activator" are *New Haven Long Wharf Master Plan* (Michael Singer, 1988-1990), *Nine Mile Run Watershed Project* (STUDIO for Creative Inquiry, 1997-2000), and *Fundred/Operation Paydirt* (Mel Chin, 2005-present). Lastly, the two "integrated models" explored are *Vintondale AMD&ART Park* (AMD&ART, 1994-2005) and *West Palm Beach Waterfront* (Michael Singer Studio, 2005-2010).

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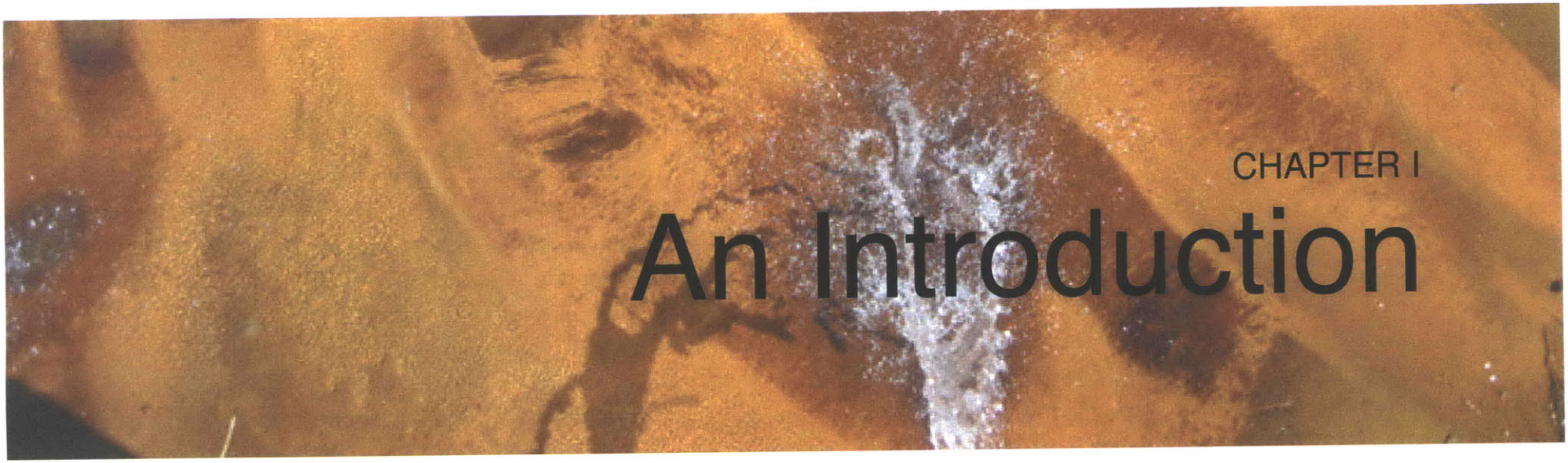

CHAPTER I

An Introduction

In contrast with the white January snow, the orange water pouring out of the discharge pipe appeared especially jarring. Metal-rich water gushes at a rate of 1,500 gallons per minute from a network of subsurface mines estimated to extend over 21,000 acres below the Pittsburgh region.[1] This discharge at Wingfield Pines is just one of 45 places where contaminated water, mostly untreated, is released into Chartiers Creek, as a result of coal mining activities that occurred before the passage of the Surface Mining and Reclamation Act in 1977, which required reclamation as part of the permitting process. The Acid Mine Drainage (AMD) creates an orange sludge of dissolved iron that covers the stream bottoms, decimates benthic habitats and disrupts the ecosystem. At Wingfield Pines, however, the water now fans out from a fountain-like horizontal pipe before it is received by a large settling pond. During a recent visit, artist Angelo Ciotti checked various objects he had placed below the fountain aimed to increase splashing and further oxygenate the water. Paths and boardwalks transverse the subsequent ponds, arranged in a color wheel formation, where the brightly colored water becomes desaturated. The unique form and the thoughtfully arranged sitting areas, stepping-stones and bird habitats reveal a poetic and naturalistic yet man-made landscape. It certainly goes well beyond the regulatory demands of AMD treatment systems. And it demonstrates what can happen when artistic, environmental and community resources are able come together to resolve difficult urban ecological issues.

FIGURE 1 (above): Iron deposits from AMD paint the ponds orange at Wingfield Pines

1 Chilcott, Perkovich, and Walton 2007.

In the United States, billions of dollars are spent yearly on environmental remediation projects meant to cleanup the damage that industrial processes have inflicted on its land and waterways. And while few projects can produce the combination of detoxification and aesthetics that make Wingfield Pines so unique, they all are critically important to the communities they impact. The process of site remediation is complex. The final land use outcomes are typically decided upon by the private sector, often a property owner who is aiming to minimize legal risk and cost while complying with the regulated toxicity levels. Meanwhile, the remediation process itself tends to be led by engineers, who have their own set of limited criteria by which to determine whether the project was "successful". Such solutions, however, often fall short of meeting community expectations or fail to use remediation as a communicative device for what is also largely a cultural and social phenomenon. They are cultural and social because the problems are created and faced by humans, yet only experts are allowed to be part of the solution. Artist, writer and environmentalist Tim Collins notes the inherent paradox to this structure: "We have learned to leave our decisions in the hands of experts, yet at the same time we have learned to mistrust those experts depending on who is paying for their opinion."[2]

Since the late 1960's, artists have found ways to insert themselves into the environmental remediation process. Such efforts tend to raise the visibility of the remediation efforts, create important bridges between what is largely a scientific endeavor and a cultural process, and address the public use of the land after remediation has occurred. Robert Smithson wrote, "Ecology and industry are not one-way streets, rather they should be crossroads. Art can help provide the needed dialectic between them."[3] Likewise, Gyorgy Kepes, founder of the Center for Advanced Visual Studies at MIT, understood the new role that artists could play in defining the environment. In 1972, he wrote, "Creative imagination, artistic sensibility can be seen as one of our basic, collective, self-regulating devices that help us all to register and reject what is toxic and find what is useful and meaningful in our lives."[4]

On a broad level, this thesis is about the potentiality that exists at the intersection of art and urban

2 *Collins 2000, 464*
3 *Smithson 1978, 220*
4 *Kepes 1972, 10*

planning in post-industrial environments. More specifically, it is about the negotiation of three distinct processes—engineering, creativity and regulatory—which align themselves in a small subset of environmental remediation efforts where artists take on lead roles. The twelve case studies represent a range of artistic practices and address an equally wide range of degraded environmental conditions. In addition to examining the details of each case, I will attempt to describe them, categorize them and analyze them on the basis their broader themes. In doing so, the goal is to explore areas *where* this type of hybridized art/planning may be more effective than the more typical developer/engineer-driven remediation model, and *how*, through interdisciplinary efforts, the practice of planners, engineers and artists can be expanded to better mutually address the scientific and cultural components of environmental remediation.

Research topic

Neither mainstream by artistic nor by urban planning standards, I hypothesize that the twelve projects discussed suggest a unique type of public practice operating at the margins of aesthetics, science and public engagement in which an artist takes a leadership role in the planning, decision-making and implementation of an environmental remediation effort. They do so by (1) actively participating in the design of the remediation system; (2) leading the process through which a contaminated site is remediated; and/or (3) working closely with other relevant parties, such as public agencies, engineers and community groups, to broaden the scope of the remediation process. Implicitly critical of existing modes of environmental remediation, these projects represent a paradigm of remediation practice that is inherently different from traditional remediation practice and has yet to be fully understood either in artistic or planning terms.

The relationship between art and planning continues to evolve, to the point that the term "public art" no longer simply conjures up the image of a sculpture in a park. Public art ranges in form, content, function, and power dynamics. In the most traditional configuration, a public artist is commissioned to adorn public works, an arrangement that can be seen today in many cities' public art programs, where a certain percentage of a capital budget is designated toward funding an artwork for that site. In this way, the artwork functions to reinforce the public work, although some projects—most famously Richard Serra's *Tilted*

Arc as well as the work of artists such as Michael Singer, discussed below, attempt to reinvent the notion of the public art commission from within the system. Temporary art installations in the public realm provide artists additional ways to engage the city critically while still working within publicly or semi-publicly funded channels. But even without public funding, artists have historically been able to find alternative ways to make their views known, which have become an integral part of public art discourse. Artist statements concerning the public sphere range from deconsecrating it (street art), protesting it (activist art), and abandoning it (land art), among other methods. I suggest that artistic engagement with environmental remediation is yet another means of artists intervening in the public sphere, following in the continuum of publicly engaged artistic practice, though it is significantly different in that the artwork must also provide a functional role in the cleanup process.

By nature, environmental remediation is a collaborative process, both explicitly (as seen in all of the cases discussed here) and covertly (between the polluter and the remediator). This raises several important questions to consider. Given the many different types of expertise required, what do artists, as "non-essential" experts, bring to the table, specifically with respect to the remediation process, environmental outcomes, and social and physical externalities? For example, with respect to process, can artists operate and undertake more imaginative processes that may not be available to other professions, such as architects and planners, due to "artistic license?" This idea will be further explored through several of the case studies, but specifically through Michael Singer's *West Palm Beach Waterfront Plan*. Often operating independently of government or private entities, artist-planners fall within a middle group of third party actors, similar to social service agencies, community development corporations, and other non-governmental organizations. Within this middle ground, how do artist-planners best position themselves to succeed?

Similarly, I am interested in the flexibility of positioning an activity as art. What value or constraints does labeling an initiative as "art" create? Does it give the artist a specific type of agency? For example, in terms of funding, are there resources that are available to artists that perhaps allow them to make choices that would not be available to other professions? In terms of community engagement, being an artist may allow for a more flexible relationship. As artist and activist Claire Pentecost explains: "Artists are not ex-

pected to know much, but they are expected to feel and to sense. They are allowed to engage whatever range of the human sensorium is necessary to them."[5]

Furthermore, I hypothesize that these twelve cases are not merely examples of "one-offs" created by unique, talented individuals, as critics may surmise. Proving this will require understanding the generalizable characteristics, challenges and best practices represented in these projects. I will look at what they share with one another and what sets them apart from more mainstream paradigms. This analysis forms the basis for assessing how, when and why policy can be better aligned to allow for more creative input in the remediation process, as well as how it can further artistic expression for artists choosing to work on this topic.

Methodology

The methodology employed for this research is predominately based on semi-structured interviews with artists, planners, engineers and other community and development actors involved in the twelve case studies, and complemented by interviews with other experts. When possible, multiple people involved with a project were interviewed in order to include a range of perspectives. Relevant text from the media, the organizations' websites and more academic sources supplement the interviews. Furthermore, scholarly research in remediation science, artistic practice, and urban planning create an interdisciplinary basis for analysis and discussion.

Chapter Outline

Strategically selected case studies, supported by critical interviews with the artists and other key actors involved with each project, will provide the basis for this discussion. There are many artists that create work in the environment or incorporate environmental issues, including environmental remediation, into their practice. Since this thesis is dedicated to the impact of such work on the physical environment, at a minimum all of the projects focus on physical reclamation/remediation/restoration in some way. I am interested in looking at artists whose projects extend over a long period of time, whose work is somehow

5 *Waxman, Pentecost, and Lambert-Beatty 2008*

transformative—either to a place or to the people who experience it—and whose trajectory takes them not only out of the studio but also out of the "public art" world and into the realm of governmental agencies, city halls, town boards and other institutional entities that regulate the use of space. As such, Chapter 2 presents a short essay that frames this research within three interrelated prisms: remediation science, art theory and history, and urban planning and design.

The list of projects is by no means exhaustive. Rather, the projects described represent a curated group that aims to illuminate the key benefits and challenges of this type of practice, which operates at the margins of both science and art. They range widely in form, strategy, philosophy and outcomes. Many projects were not included because they are either generic or do not contain relevant lessons for planners and artists. The truth is that many "bad projects" exist in the realm of public art and more specifically, so-called functional environmental art. Rather than focus on those instances, the hope is to showcase the more dynamic projects as models.

Chapters 3 through 6 will discuss twelve projects that form the case study basis for analysis. They are categorized by chapter as well as by increasing levels of complexity. Chapter 3, "Artist-led Remediation," looks at four projects in which the artist acted independently to identify, envision and create a large-scale work of art on a contaminated site. I discuss Agnes Denes' *Wheatfield*, Angelo Ciotti's *Twin Stupas,* Newton and Helen Harrison's *Spoils Pile Reclamation Park* and Jackie Brookner's *Veden Taika.*

Chapter 4, "Post-facto Artist Engagement" describes three projects where the artists were not involved with deciding on the remediation technologies per se, but still engaged in the design and development of remediation sites in other ways. Two are examples of working with former landfills: *Byxbee Park* and *North Waterfront Park*. The third case, *Wingfield Pines*, as described in the opening paragraphs, is a treatment system for Acid Mine Drainage near Pittsburgh that represents a collaboration between a non-profit land trust, an engineering firm and an artist.

Chapter 5, "Artists as Activators," discusses projects that are precisely the opposite. Rather than being invited to participate after the remediation process and implementation have occurred, artists are now the ones leading the early stage advocacy, organizing and design efforts before remediation is carried out,

thus shaping the ultimate outcome from its beginning stages. Their contribution takes the form of a process, rather than a physical product. These projects include Michael Singer's *New Haven Long Wharf Plan*, Mel Chin's *Fundred/Operation Paydirt*, and a more in-depth discussion of STUDIO for Creative Inquiry's *Nine Mile Run*.

Finally, Chapter 6, "Integrated Models," showcases projects that embraced a pluralistic planning model with integrated collaboration between engineers, artists, planners, and community residents. This is not to imply that an integrated model represents the highest or best solution, but rather that it is yet another model with its own unique benefits and challenges. The two case studies for this chapter, however, are quite different from one another: AMD&ART, a non-profit organization, led a small, grassroots effort in rural Pennsylvania, while Michael Singer's West Palm Beach Waterfront is a large, municipally-funded urban waterfront design project.

Taking a step back, the final chapter looks broadly at the themes that emerge from these projects, teasing out seven important factors that influence their outcomes. What does artist engagement in environmental cleanup do, either functionally, aesthetically, or socially? How do the artists navigate the question of artistic autonomy and the functional role that their work requires? What form do the projects take and how is it significant if the art is visible/tactile versus conceptual or process-oriented? As environmental remediation, by definition, results in a change in the environment, how, if at all, is that process revealed in artworks? Are the projects meaningful as works of art, or is artist Robert Morris accurate when he wrote, "artists who deeply believe in social causes most often make the worst art"[6]?

Conversely, from a policy and planning point of view, what remediation techniques are utilized and how are they decided upon? Is the remediation design typical or experimental? How is the environmental success of the project measured? Just as the artistic output has evolved since the 1970s, so too have the regulatory laws that dictate what remediation must do. Therefore, what is the role of regulation and how does it influence both the artistic and scientific outcomes of the projects? In other words, how "tied" was the artist's hand and what are the implications? How are the design and development processes of these

6 Morris 1980, 102.

projects unique from mainstream practice? What role do artists play in the professional world of engineers, designers, NGOs and the public sector? Did arts funding help support the project? How well did the creative process work, and by what measures? How is the addition of so-called "artistic sensibility" manifest in the remediation projects studied here? These questions, and the answers that the case studies offer, point to a set of suggestions for planners, designers and artists that can help promote and improve upon interdisciplinary environmental remediation projects in the future.

CHAPTER II

Framing the discussion: A triple narrative

One of the challenges—and also the intrigue—of this topic is its interdisciplinary nature. Both the approach of the artists/teams discussed in Chapters 3 through 6, as well as my approach as author, involve working across disciplinary boundaries. This involves negotiating different points of view about what remediation means and should be, differing ideas about what constitutes a "successful" project, and diverse "languages" that are used to describe the practice. Artist involvement in environmental remediation necessitates deconstructing the "triple narrative" of regulatory, scientific and artistic approaches. As such, it is necessary to introduce these three perspectives separately in order to create a firmer basis for how to interpret the case studies. In this section, I outline major moments in the environmental history of the U.S., including key legislation that changed the practice of remediation such as the Clean Water Act, the Comprehensive Environmental Response, Compensation and Liability Act (CERLCA a.k.a. Superfund), and Brownfields Law, particularly how they intersect with various waves of environmentalism. This will be followed by a discussion that frames some of the artworks and art theories that led to artistic engagement in the cleanup of industrial contamination and waste. These artistic practices can be traced to many influences, but include Joseph Beuys, Robert Smithson and the rise of eco- and environmental artists in the 1970s. Lastly, an examination of planning theories on post-industrial development, landscape theory, and

the temporal aspects of environmental design redirects the conversation away from art theory and towards a normative discussion about the role that art and ecology should play in the built environment.

Environmental remediation in the U.S.: a brief historical overview

Throughout modern history, a tension has existed between human progress and the earth. On extreme ends of this human progress-to-earth spectrum, the earth is seen as a source of energy extraction that can be controlled by engineering, on the one hand, and as a fragile, endangered resource in need of protection, on the other. Within the middle ground are a wide range of ecological theories on the self-regulating abilities of the ecosystem (Gaia hypothesis), notions of the "wilderness" as a Western cultural construct[1], and conflicting views as to what state the environment should be restored to.[2] Separating nature from man was the goal of early conservationist wave of environmentalism in the twentieth century, led by Theodore Roosevelt, John Muir, Aldo Leopold, and other white, eastern establishment elites. This movement led to the creation of the U.S. National Parks system as a means of protecting large areas from the ever-increasing areas of industrial extraction.[3]

The second environmentalist wave in the U.S., which symbolically began with Earth Day 1970 but actually preceded this date by several years, can be called the "legal wave". In ten years, Congress passed 23 separate acts that regulated and protected environmental resources, such as clean air and water, and monitored the public health impacts of toxic chemicals, radioactivity, and mining, among others.[4] Perhaps most significant was CERCLA, the Comprehensive Environmental Response, Compensation, and Liability Act (popularly called the Superfund Act), which passed in 1980, and held present and past owners of contaminated sites legally responsible for their cleanup.

The 1980s saw "push back" from the policies of the 70s, which led environmental historian Andrew Light to label this wave "Beltway environmentalism." While CERCLA was a major step in forcing responsible parties to address their damaging past, the policy essentially stagnated development on post-industrial

1 Light 2005, 41
2 Turner 2008.
3 Light 2005, 50
4 Ibid..

sites, as the unknown costs of developing former industrial sites became too risky for developers and bank lenders. Legal challenges to the various acts led to legal confrontations and expensive lawsuits. At the same time, the environmentalist movement shifted its attention away from the urbanized realm and towards "nature" issues, including protecting endangered species and rainforests, which was reminiscent of the first-wave environmental movement.[5]

In the 90's, it became obvious once again that the mainstream environmental movements had shifted their focus away from people in general, especially those that were poor or of color. The environmental justice movement expanded their agenda towards a more social approach to environmental issues. According to Light, this wave remains incomplete. Arguing that a the nature/culture dualism is a false distinction, he writes, "we cannot preserve the Grand Canyon without considering urban growth in Arizona. Nor can we take up the issue of asthma hotspots in inner city Chicago without attending to land use patterns in the counties surrounding Lake Michigan. But doing this is not easy."[6]

The late 90s and early 2000s also saw the establishment of more nuanced policy-making to counteract the bluntness of the legislative acts passed in the 70's. Through advocacy, lobbying, legal and legislative change, various tools were developed to chip away at the disincentives to redevelop contaminated land. For example, the 2002 Brownfields Law,[7] among other things, protects potential purchasers of brownfield sites from liability if the site had already been remediated, even if further contamination is identified, thereby encouraging brownfields development. Other policy developments include the creation of express cleanup standards, the establishment of a more efficient and responsive government review process, the implementation of government incentives to attract developers, entrepreneurs, commerce and industry back to blighted urban areas, and financial incentives, such as tax abatements and credits, for developing on brownfields. In their own way, they each aim to lessen the burden of remediation costs by enabling developers and lenders to calculate costs with more accuracy.[8] Other initiatives encourage cleanup by third-par-

5 *Light 2005, 51*
6 *Light 2005, 54*
7 *On January 11, 2002, President Bush signed the Small Business Liability Relief and Brownfields Revitalization Act ("the Brownfields Law")*
8 *Sattler, et al. 1998*

ty actors, such as watershed associations or other NGOs. Pennsylvania's Good Samaritan Act, for example, limits the liability of third-party groups that wish to cleanup abandoned mine contamination, including water quality issues such as acid mine drainage.[9] The EPA and their state counterparts have developed grant programs encouraging third-party groups to conduct pilot projects to spur innovation in remediation technology and technical assistance, as well as programs directed at the social impact aspects of remediation, such as brownfield job training, sustainable development, and environmental justice. Optimism over these programs must be balanced with the realities of the current on-going financial crisis, which threatens the viability of some of these programs.

Lastly, it is important to point out that the recent "green boom" over the past 10 years has also impacted how remediation technologies are selected. Highly engineered techniques for treating contamination are losing favor for more passive, "greener" treatment systems. For example, ex-situ remediation that requires heavy trucking is increasingly looked upon less favorably because of the resources and energy consumed. Phytoremediation—the use of plants to contain, remove, or degrade contaminants—which many in the early 90's thought would be the "silver bullet" of remediation but which initially saw mixed results, has reemerged as an important part of the remediation technology tool kit, while the EPA continues to fund pilot projects to further improve the technology.[10] "Sustainable remediation" has made its way into guidelines and white papers, but the fundamental laws and regulations governing remediation have yet to change. Interestingly, much of the research for such passive technologies has come from the U.S. Department of Defense, which is also responsible for the many contaminated military bases throughout the United States.

Art and Environmentalism

The rise of the environmental movement in the 70's also gave rise to a simultaneous movement among artists. Terms such as eco-art, environmental art, earth art and land art have all been used to describe

9 *PA Department of Environmental Protection 2011*
10 *Personal interview with Niall Kirkwood. 2/27/11*

the various ways in which artists engage with the environment.[11] From an art historical perspective, environmental art can be viewed as an umbrella movement that describes a range of art practices that draw influences from conceptual art, process art, feminism, and activist art. There is disagreement among art historians about the relationship between earth artists of the 60s and 70s, such as Robert Smithson, Robert Morris and Michael Heizer, who used remote parcels of land for large-scale sculptural pieces, and what might better be termed eco-artists, such as Helen and Newton Harrison, Alan Sonfist and Mierle Ukeles, who express a clearer position vis-à-vis environmentalism. Whereas the first group can be seen as emerging from a minimalist sculptural tradition, the second group might be more closely linked with cybernetics and systems theory, which extol self-regulation and feedback as a means of organizing natural and manmade systems. The latter is perhaps best expressed by Hans Haacke's *Rhine Water Purification Plant* (1972), a self-described "real time social system" involving an installation in a gallery space that pumped in murky, polluted river water that had ostensibly already passed through the municipal treatment facility, filtered it in a tank in the gallery space filled with goldfish, and then pumped it back out to irrigate the museum's gardens. Art historian Amanda Boetzkes suggests that this philosophical divide between earth artists and eco-artists is not as pronounced or simplistic as often described. Rather, the range of artistic practices suggest a continuum: "The continuity between the generations lies in the artists' impetus to challenge definitions of both art and nature, to reveal the limits of human conceptions of nature, and to open art to the contraction of elementals that give rise to a sense of the earth."[12]

What might be construed as a criticism of much of environmental art, but is perhaps simply more a characterization, is its problematic relationship to the Avant-garde tradition that dominated 20th century art. Ideologically, this tradition maintains an inherently critical and subversive relationship to dominant systems and institutions. "The moment that the artist begins to produce his work for any interest, agenda, or cause, other than his own, singular vision, he sacrifices the purity that sustains and defines that work

11 *The nuance of these different terms is not the topic of discussion for this thesis. For a useful resource, see Sue Spaid's "Ecov ention" catalogue, or visit the Green Museum online (www.greenmuseum.org)*

12 *Boetzkes 2008, 24*

of art in the first place," art historian Grant Kester explains. "This detachment is necessary because art is in constant danger of being subsumed to the condition of mass culture, entertainment, or propaganda and can preserve its distance from these beguiling cultural forms only through a principle of opposition."[13] . Art that is functional, that aims to solve a problem, breaks from this trajectory in problematic ways, risking becoming complicit in dominant systems that are perhaps responsible for the problem that the artwork is trying to "solve". The broader design profession generally does not concern itself with this distinction as much, and thus this is perhaps a general division between art and design.

In *Notes on Art as/and Land Reclamation* (1979), Robert Morris acknowledges the uncomfortable "ménage-a-trois between art, government and industry" when artists such as himself are invited to create earthworks on former mining pits, asking rhetorically, "does art as land reclamation promote the continuing acceptation of resource-energy-commodity-consumption cycle?" The answer, of course, is yes. But he takes a "so what?" attitude. Artists have forever been at the beck and call of dominant power; art has always served, though at some points more blatantly than others. Art, according to Morris, is amoral. His essay concludes brazenly yet poetically:

> Should the government/industry sponsorship of art land reclamation be enthusiastically welcomed by artists? Every large strip mine could support an artist in resident. Flattened mountaintops await the aesthetic touch. Dank and noxious acres of spoil piles cry out for some redeeming sculptural shape. Bottomless industrial pits yawn for creative filling—or deepening. There must be crews out there, straining and tense in the seats of their D-8 caterpillars, waiting of the confident artist to stride over the ravaged ground and give the command, "Gentlemen, start your engines, and let us definitively conclude the twentieth century.[14]

The essay is problematic in that, on the one hand, Morris reveals his deep knowledge of the mining industry, recent political activity in Congress related to it, and its profound impact on the environment. Yet, split-faced, he confronts it and essentially says, who cares? The sarcasm evident in his concluding paragraph

13 Kester 2005a, 20
14 Morris 1980, 102

reveals that adhering to a philosophy of amorality is not as easy as it sounds. I suspect that what it reveals is not his lack of morality, but rather an artistic positioning of himself at a critical distance from his topics in order to avoid the trappings and pretense of moralism. As an informed artist, he decides to transform the site into a monument of Twenty-First Century industrial history, rather than an unarticulated landscape that hides this past, thereby acknowledging the site not only industrial fallout, but as a cultural construct.

Such debates raise an interesting question of what art in the environment should *do*. Should it ameliorate an environmental problem or challenge the social structures that created the condition? Neither? Both? The 1992 exhibition *Fragile Ecologies,* curated by Barbara Matilsky, is one of a small handful of exhibitions that brought together environmental artists from the margins of the art world and put them into the spotlight. The show was criticized, however, for how it positioned artists as "saving" the environment, as if nature itself was a static object that needed humans to rescue it. According to critic T.J. Demos:

> At the root of the problem is *Fragile Ecologies*' tendency to separate nature from culture. Relegated to a non-cultural zone of organic purity, and reminiscent of the mythopoeic realm attributed to the biological environment in James Lovelock's 'Gaia' hypothesis—nonetheless another crucial matter in the development of ecological discourse—nature ends up objectified as an ontology divorced from social, political, and technological processes.[15]

This, he argued, creates "a dangerous depolitisation" of art. So the question that faces the artist is how to create work that is, on the one hand, meaningful, and on the other, critical?

Another key influence on artists working with the environment was German artist Joseph Beuys, whose concept of the "social sculpture" helped further liberate art from its "objectness." Beuys saw society as a sculpture shaped by the cumulative creative acts of millions of individuals. Art, to Beuys, was expressed as a public dialogue through which relationships between man and man, and man and environment could be reconciled. His influence paved the way for future generations to expand their artistic practice into the realm of the non-physical. Mel Chin, whose project *Fundred/Operation Paydirt* is discussed later in this

15 Demos 2009, 20

paper, pays tribute to Beuys' influence on his own practice in an ironically titled speech/essay called "My relation

to Joseph Beuys is Overrated." According to Chin, "Beuys set up conditions for my development as an artist. He left considerable traces in the art world and political world, which have osmotically, if not directly, influenced the work I present...The role of the artist is to take on a catalytic posture. I must take action beyond Beuys with Beuys." [16]

Making a similar argument, art theorists such as Grant Kester and Clare Bishop write about contemporary "socially engaged art," a genre in which the work of art shifts from providing content to providing context. "Dialogical art," Kester argues, replaces the autonomy of avant-garde art, where artists work in alliance with communities in political struggles involving environmental, urban and cultural debates. These dialogues between diverse participants can provide emancipatory outlets through process and performance-based approaches. Such practice often relies on collaboration, both among artists and with others, and some, like Bishop, worry that "aesthetic judgments have been overtaken by ethical criteria."[17] As will be discussed later, the *Nine Mile Run Greenway Project* and *Fundred/Operation Paydirt* are two examples of long-term initiatives that challenge the role of authorship and autonomy of avant-garde art. Like Beuys' notion of the collective of creative individuals, Kester is interested in art that creates a context for discussion. The "output" for these projects is establishing a platform for community engagement, dialogue and constituency building.

While it is not the aim of this paper to engage in art theoretical debates, I believe this discussion is important because each of the artists discussed in the case studies made the decision to allow for a level of functionality in their work that engaged in the environment with the goal of mitigating contamination. Their motivations varied widely, at times espousing a romantic/ethical view towards saving nature (such as *Twin Stupas*), a restoration aesthetic perspective (such as *Spoils Pile Reclamation Park*), a desire to confront to dominant power (such as *Wheatfield*), or a dialogical relationship to create space for community

16 Chin 2001, 136-137
17 Bishop quoted in Roche 2006

collaboration (such as *Veden Taika*). As such, these works do not exist in a vacuum, but form part of the continuum of artistic practices, theory and language that emerged over the second half of the twentieth century.

Place, time and change

While perhaps a marginal form of practice within the mainstream art world, as the topic for an urban planning thesis, the genre of artist-driven remediation resonates and offers compelling lessons and models. Urban planning is primarily concerned with problem solving, and often times the spirit of possibility and potential can get lost when discussing utilitarian processes such as environmental cleanup. Artist-based models offer ways to go beyond meeting minimum satisfactory goals by animating spaces and processes in new ways, and in the best instances, give reasons for planners and designers to revisit their approaches.

Two interrelated concepts from planning and landscape literature about the built environment that are particularly relevant to art and remediation sites are (1) the notion of time and change in the built and natural environment and (2) the concept of landscape in service of a "higher cause". Urban planning theorist Kevin Lynch explored the notion of temporality and change in *What Time Is This Place?* Remediation, by its nature, results in a change in the landscape as it transitions from a contaminated landscape to a less toxic one. Lynch was interested in how change, which is often beyond our perceptual reach, can be made visible. This is perhaps best expressed by his analogy that, "Venice should be seen to be sinking".[18] He outlined a series of strategies that an environmental designer might consider to visualize change, such as the visible accretion of signs of the past, contrasting the present state with remembered and expected states, direct visualization of environmental change, or symbolically speeding or slowing otherwise imperceptible changes. As will be discussed in the case studies, articulating the past, and for some, the on-going evolution of the landscape, is a recurring theme in many of the works.

The landscape architecture field has provided enormous contributions to how contaminated sites can be re-envisioned. Beardsley's first edition of *Earthworks and Beyond*, first published in 1984 and now

18 *Lynch 1976, 171*

in its fourth edition, was a pivotal publication in that it established this relationship and captured the attention of the landscape architecture community, which began to seriously consider earthwork as part of landscape design.[19] Beardsley pointed out the bridge between earthwork artists and Frederick Law Olmsted's approach to urban landscape design, although Robert Smithson had already written about his own work in relation to Olmsted in a 1973 essay "Frederick Law Olmsted and the Dialectical Landscape."

Waste as a byproduct of civilization challenges the utopian idea of the modern city, often resulting in it being ignored or overlooked. Simply acknowledging wastescapes as part of the human-environment system is necessary if modifications to that system are to be proposed. Alan Berger suggests that the term "post-industrial" does not reveal the dynamism of wastescapes, arguing that it is an outlook that "reifies the site as essentially static and defines it in terms of the past rather than as part of ongoing industrial processes that form other parts of the city."[20] In this way, landscape design does not merely exist for its own sake, but "in service" to others—be it environmental, economic or public well-being. Once we accept that we will never eliminate waste ("dross"), how can it be integrated into flexible design strategies? Projects such as *North Waterfront Park*, *Wingfield Pines* and *Veden Taika*, as well as others, offer alternative types of treatment systems that operate based on a systems theory approach to remediation.

Putting wastescapes back to work for social and economic interests has been explored in art, design and engineering in different but often overlapping ways. Mel Chin's *Revival Field*, a phytoremediation installation that has traveled to various contaminated sites, created a bridge between the science of phytoremediation and its use in practice. Likewise, innovative projects created by landscape architects, such as Germany's Emscher Landscape Park, which revitalized an industrial valley, or environmental engineer John Todd's Living Machines, a biological waste water treatment system, have considered waste and contamination as an asset, and such thinking has fed back into artistic practice. Artist Jackie Brookner's work, for example, creates "biosculptures," which are remediative works of public art that treat water contamination. All of these casses, and the ones explored in the following chapters, are examples of environmental remediation *plus*, layering multiple functions on what is more typically siloed as an engineering activity.

The next four chapters will explore the details of the twelve cases in light of the triad of disciplinary lenses described: environmental activism and policy, avant-gardism and social artistic practice, and transformational landscapes impacted by

19 Personal interview with Niall Kirkwood. February 27. 2011
20 Berger 2006. 200

an industrial legacy. As mentioned before, they are organized into four categories (artist-led remediation, post-facto artist participation, artist as activator, and integrated models) as a means of highlighting the variation of methodology and form amongst the cases.

TABLE 1: Summary of Case Studies

	Project Name	Location	Date	People	Environmental Issues	Scale
Chapter 3 : Artist-led Remediation	*Spoils Pile Reclamation*	Lewiston, NY	1976-1978	Helen and Newton Harrison	Landfill	20 acres
	Twin Stupas	Chicora, PA	1987-1996	Angelo Ciotti	Strip Mining	22 acres
	Wheatfield- A Confrontation	New York, NY	1982	Agnes Denes	Landfill	2 acres
	Veden Taika	Salo, Finland	2006-2009	Jackie Brookner	Water quality, habitat	3 floating islands
Chapter 4: Post-facto Artist Engagement	*Byxbee Park*	Palo Alto, CA	1988-1992	Peter Richards, Michael Oppenheimer, George Hargreaves Associates	Landfill	45 acres
	North Waterfront Park Master Plan	Berkeley, CA	1989-91	Richard Haag, John Roberts, Agnes Denes	Landfill	90 acres
	Wingfield Pines	Allegheny County, PA	2001-2010	Allegheny Land Trust, Hedin Environmental, Angelo Ciotti	Acid Mine Drainage	80 acre total site (AMD system on a portion)
Chapter 5: Artist as Activator	*New Haven Long Wharf*	New Haven, CT	1988-1990	Michael Singer	Water quality, habitat	1 mile corridor
	Nine Mile Run	Pittsburgh, PA	1997-2000	STUDIO for Creative Inquiry	Slag heaps, stream restoration	240 acres
	Fundred/ Operation Paydirt	New Orleans, LA/ across US	2005- Present	Mel Chin	Lead contamination	Every lead contaminated property in New Orleans
Chapter 6: Integrated Models	*AMD&ART*	Vintondale, PA	1994-2005	Allan Comp, Julie Bargmann, Stacy Levy, Bob Deacon	Acid Mine Drainage	35 acres
	West Palm Beach Waterfront	West Palm Beach, FL	2005-2010	Michael Singer Studio	Water quality, habitat	12.5 acre waterfront

CHAPTER III

Artist-Led Environmental Remediation

In the projects discussed in this chapter, the artists identify a contaminated site and create a large-scale work of art that functionally addresses the environmental condition, but also situates the project in a broader social or environmental context. I summarize three projects--Newton and Helen Harrison's *Spoils Pile Reclamation Park*, Angelo Ciotti's *Twin Stupas*, Agnes Denes' *Wheatfield—A Confrontation*—and explore Jackie Brookner's *Veden Taika* in more depth. Clearly defined by an "artistic vision", the projects show the range of outcomes that can result from artists undertaking remediation as part of the process of creating a work of art. For this reason, I am calling them "artist-led" remediation projects. In all the cases, the artists identified the problem on their own and carried out a response to it, although all projects required working with others in their realization. The works share a common sense of utopianism about the world that could be, combined with a practicality required to actually carry out a work that functions environmentally. They call attention to not only the environmental condition, but the way in which the natural and cultural, and for some the spiritual, shape one another. To me, they evoke the notion of Joseph Beuys' social sculpture by showing how non-traditional actors can intervene in a largely technical field through resourcefulness, creativity and unexpected collaborations.

Art Park: Spoils Pile Reclamation

An early example of this type of project is California artists Helen and Newton Harrison's *Art Park: Spoils Pile Reclamation* completed in 1976-78 at the Lewiston Art Park located in upstate New York. The project reclaimed a contaminated dumping site (a quarry that was filled with debris from the construction of the Niagara Power Plant) by incentivizing truck operators to dump more than 3000 piles of organic waste material at strategic locations on the brownfield, rather than at the city landfill, which was located further away. Ingeniously, they convinced the truck drivers to do so by offering them a tax deduction for contributing to a non-profit artwork. When trucks arrived at the park, signs directed them to giant white Xs on the spoils pile where they should dump.

FIGURE 2: *Art Park Spoils Pile Reclamation* Site sign and instructions
© www.theharrisonstudio.net

Mounds of organic material capped 20 acres of the brownfield, and blossomed into an undulating meadow for public use after local scout troops collected native seeds and planted them throughout. Trees were planted as windbreaks, as well as to create orchards.

The project was so successful that the Lewiston Art Park, overwhelmed by the tremendous response by the dump trucks, prematurely ended the project before the second half of the park was completed. According to Newton Harrison, the administrators were concerned that future artists invited to the park wouldn't have a place to locate their work. "People have always been nervous about the scale that we work," said Newton Harrison. "But we define the boundary conditions, which in this case was the site itself."[1] Ironically, the administrators, who wanted to create an art park dedicated to environmental art, were unwilling

1 *Personal interview with Newton Harrison, 3/12/11 (phone)*

FIGURE 3 (left): Signs directed truck drivers where to dump
© www.theharrisonstudio.net

FIGURE 4 (right): Native species and wild flowers flourished on the site
© www.heharrisonstudio.net

FIGURE 5: *Art Park: Spoils Pile Reclamation* (1976-78) by Helen and Newton Harrison. 3,000 truckloads covered half the site before the Art Park Director stopped the project.
© www.theharrisonstudio.net

to fully accommodate a piece that was actually enhancing the natural condition of the property at a price that was far less expensive than dealing with such a contaminated site in a traditional fashion.

Twin Stupas

Similarly, artist Angelo Ciotti often makes a cost argument when explaining his work as a "reclamation artist." Growing up near mining spoils piles near Pittsburgh, Pennsylvania, Ciotti works primarily with contamination resulting from defunct mining sites. During a site visit to his home outside of Pittsburgh, he pointed out mining relics and bony piles (often barely decipherable beneath a layer of vegetation) while we en route to one of the projects he worked on. "The earth, of course, will recover on its own," Ciotti explained. "But I get pleasure in making the process faster."

Ciotti's first large scale mine reclamation project was called *Twin Stupas* (1987-1996). Located near Chicora in Butler County, PA, approximately 45 miles northeast of Pittsburgh, the work reclaimed a hazardous abandoned surface mine and transformed it into a sculptural landform that increased biohabitat.

A combination of passion and good fortune helped bring the project to fruition. In the 70s, Ciotti's artwork used coal products to create installations in gallery settings, and he was invited to do such a project in the Governor's Garden in the State Capital, Harrisburg. One day, then-Governor Dick Thornburgh invited Ciotti in for lunch, and Ciotti took advantage of the moment to tell the Gover-

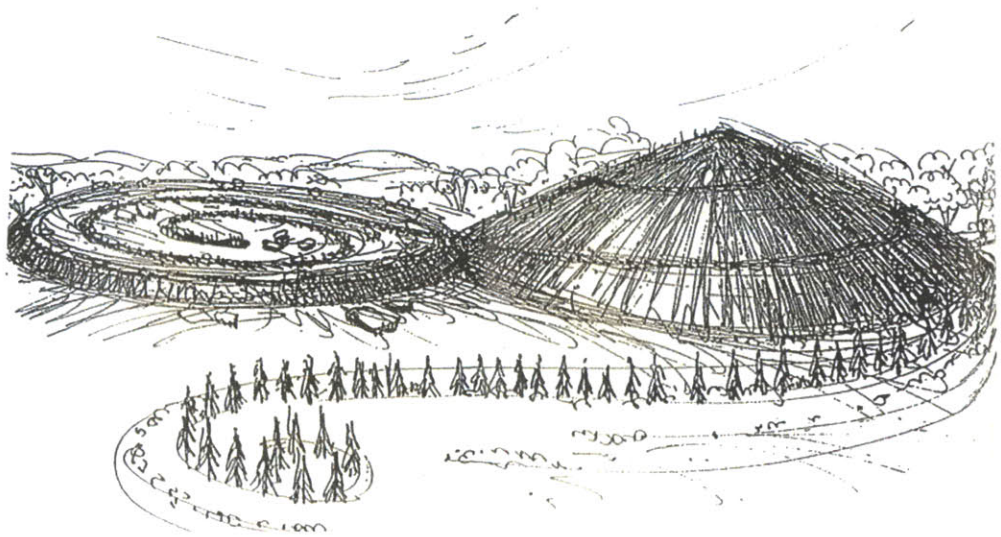

FIGURE 6: Drawing of *Twin Stupas* by Angelo Ciotti, Chicora, Butler County, Pennsylvania © www.angelociotti.com

nor that his real ambition was to work on actual mine reclamation projects, not simply coal-based installations. With the Governor's endorsement, the surface mine property that he had acquired was promoted to a Priority 1 site eligible for state reclamation funding. Altogether, the project budget was $170,000. Ciotti approximates that he saved about $70,000 by utilizing the existing spoils pile topography lines and thus limiting the amount of earth that needed to be moved.

Twin Stupas consists of two mounds 300' in diameter—one "living," 60' high mound covered in vegetation and one "dead" inverted mound, 45' deep and lined with rocks and boulders. Spiral pathways connected the two mounds. The project returns life back to a ravaged landscape by reestablishing a natural habitat for a variety of species. Working closely with the PA Game Commission, the planting scheme specifically aims to increase the wild turkey population, per the Commission's recommendation. Today, that population is three times what was originally intended. According to Ciotti, the piece is meant to make a powerful aesthetic statement through earthwork, vegetation, form and color.

In addition to the Game Commission, Ciotti worked closely with a range of other governmental and non-governmental entities, including the Pennsylvania Department of Environmental Resources, Chicora

FIGURE 7: *Twin Stupas* (1987-1996) by Angelo Ciotti, Chicora, Butler County, Pennsylvania
© www.angelociotti.com

County Soil Conservation Service, and a contractor. In a back and forth with the DER, Ciotti would present a design, they would critique it and he would simplify it and re-submit. This iterative process went on until they reached a design that met the necessary regulatory standards. He also received a grant from the Pennsylvania Council on the Arts for the construction of a spiral path around the mounds. "For me," Ciotti said, "the most important aspect of my work is that is functional. I have certain aesthetic preferences, but they take a back seat to functionality."

Wheatfield—a Confrontation

Unlike Ciotti, artist Agnes Denes, a pioneer of the environmental and conceptual art movements, would not agree that an artistic vision must take a back seat to a functional design, but rather that they

FIGURE 8: *Wheatfield - A Confrontation* (1982) by Agnes Denes. Battery Park Landfill, downtown Manhattan, 2 acres of wheat planted & harvested, with artist standing in the field © Agnes Denes www.greenmuseum.

should always coincide. Her strong commitment to public art is matched by an equally strong conviction on the importance of creating work that is large-scale and meaningful on an artistic, environmental and social level.

> When you are in your studio you make the art you want. When you go out into the environment, the garbage collector tells you what to do, everybody tells you what to do... everybody is your boss. So you have to live with that if you want to work in the environment...But it's a waste of time. If I were more merciless about it, and less of a purist—which I've been told I am—more of my projects would've been realized. But there's no sense talking about that. They were realized in my head. And they are realized in the books.... But it would've been nicer for them to be realized.[2]

The terminology she used is "purist"; another way of describing her approach might be utopian or Modernist. Her work reveals a commitment to creating monumental works that communicate a strong artistic vision as well as an ecological approach. She describes the two defining categories of her body of work as "environmental and philosophical," or what she has termed Eco-logic. "It is on the bridge between them, between the logical and the ecological, between thought and life, that the most urgent paradox is to be found, and the heart of her insight is to be located."

In May 1982, Denes planted a 2-acre wheat field on the Battery Park landfill (current day Battery Park City) in lower Manhattan. Using a hardy wheat variety, the project required bringing in 200 truckloads of dirt, digging 285 furrows, hand-sowing the seeds, and harvesting over 1000 pounds of healthy wheat four months later. According to Denes, "Wheatfield was a symbol, a universal concept. It represented food, energy, commerce, world trade, economics. It referred to mismanagement, waste, world hunger and ecological concerns. It called attention to our misplaced priorities"[3] The paradox of planning a field on land worth $4.5 billion to harvest wheat worth about $158 is reflected in the work's subtitle—"a confrontation". In addition to drawing widespread media attention, the project also drew the attention of the ecosystem, as a variety of animals, such as mollusks, ladybugs, praying mantises, mice and spiders, were drawn to the

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2 *Personal interview with Agnes Denes, 1/29/11*
3 *Denes 1992*

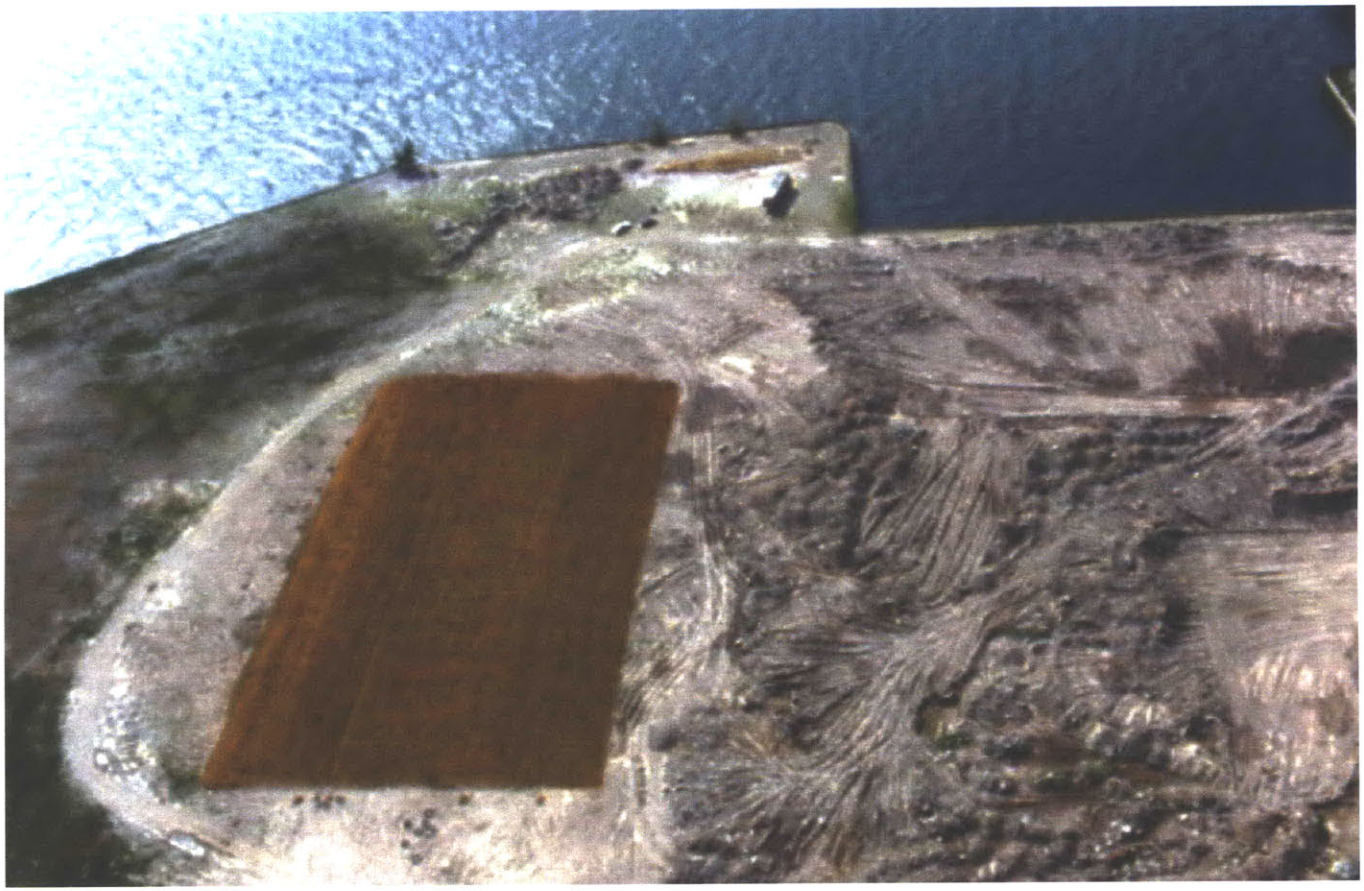


FIGURE 9: Aerial view of *Wheatfield - A Confrontation* by Agnes Denes © Agnes Denes www.greenmuseum.org

former landfill. After the harvest, an exhibition featuring the harvested wheat and documentation of the event traveled to twenty-two cities.

While the examples thus far point to an art tradition rooted in the 1970's and 80's, it is important to note that the environmental art movement continues as a form of artistic practice today, particularly during the past 10 years. A more contemporary example of a project that exhibits similar characteristics to *Wheatfield* is *Not a Cornfield*, created by artist Lauren Bon in Los Angeles, California in 2005. The project transformed a vacant 32-acre brownfield in the center of Los Angeles into a cornfield for one agricultural cycle, but also spurred engagement with the planning of a state park adjacent to the site. The project, designed and funded by the artist, called attention to the degraded quality of the land while at the same time referencing the historical significance of the crop and the harvest cycle as a social indicator of health, rebirth and human-nature connection.

Veden Taika

An example of a more recent project is *Veden Taika (The Magic of Water)*, a project by artist Jackie Brookner in Salo, Finland (2006-2009). Brookner was invited to Finland for the Halikonlahti Green Art Biennial, the theme of which was "water". I am including the project here in the "artist-led remediation" chapter, but it could easily fall into Chapter 5—Integrated Models. While the design and program concept of the project was Brookner's (after arriving in Finland, she communicated with locals and developed the concept), community groups, regional scientists, local vocational school students and staff from Salo public agencies all collaborated to bring the project to fruition. Brookner, who is based in New York, particularly depended on the cooperation of artist and Biennial Coordinator Tuula Nikulainen, who she considers to be the lead collaborator on the project. German artist Georg Dietzler was the co-curator.

The City of Salo was in the process of constructing an addition to the Municipal Sewage Treatment Facility when Brookner arrived. The ponds adjacent to the facility had historically been used as settling pools for the sewage treatment system, but had ceased performing that function in 1982. Since then, migrating birds had flocked to the ponds, leading to its demarcation as an EU-directive conservation site.

The soil and water quality of the pond, however, contained contaminants from the pond's former use, including fatty organic pollutants, oils, and heavy metals, as well as continual pollution from agricultural runoff. Working with Michael Shaw from the Scotland-based Ecovillage Institute as well as regional limnologists to analyze the chemical composition of the lake, they devised a strategy consisting of three floating islands. Two smaller islands were planted with native wetland species specifically selected to remediate the nitrous and phosphorous in the water and sediments. The roots of the plants, which hang down into the water and are naturally covered with microorganisms, metabolize contaminants in the pond. The larger island (7.45m x 28m) provides a nesting site for birds where they are safe from small mammals. Lastly, a wind-powered mist spray adds a theatrical dimension to this island, contrasting the natural and the artificial. The aerators beneath the islands also contribute to the functionality of the treatment islands by oxygenating the water and stimulating the microbial process on the plant roots.

FIGURE 10: Volunteers testing plants on one of the islands in Salo, Finland © www.jackiebrookner.net

Students and faculty from the Salo Polytechnic Institute, a nearby vocational school, were largely responsible for the creation and installation of the three islands. This involved the construction of the structure of the islands, sculpting artificial rocks from foam, and rigging an underwater electrical line for the misting spray. Other volunteers were involved with installing the netting over the base and helping

FIGURE 11: *Veden Taika (The Magic of Water)* (2007-9) by Jackie Brookner, Halikonlahti Bird Pools, Salo, Finland © www.jackiebrookner.net

with the vegetated substrate.

Significantly, the project received two science grants from the Nessling Foundation for $10,000 each, the first time that a project led by a non-scientist was awarded such a grant. As a pilot project for a passive water pollutant remediation technology, there is a long-term monitoring contract in place, and the islands are checked biannually to measure changes in water quality and to monitor its effectiveness. While water quality tests are not yet available, at the end of the first nesting season, there were nearly 30 nests on the island for gulls and common terns. This number increased during the second season, when an estimated 350 birds were nesting.

For Brookner, the ecological success of the project is only one indicator in how she assesses her work. The conceptual, social, and expressive levels are of equal importance. She rhetorically asks herself in an exhibition catalogue statement showcasing the work, "How much have people in the locale of a project been engaged in creating, enjoying and maintaining it? Are there demonstrable ecological benefits? Is the system working biologically, mechanically, and socially? Does it move people to think about what the "being" of human means? Is it transformative?"[4] In contrast to Wheatfield, a dramatic statement that drew international attention to itself for one summer but had limited environmental impact once construction of Battery Park City commenced, Veden Taika reveals a long-term commitment to both an environment problem and to the community that helped create it.

4 Brookner 2010, 9

TABLE 2: Chapter 3 Summary: Artist-Led Remediation

	Spoils Pile Reclamation Site	Twin Stupas	Wheatfield- A Confrontation	Veden Taika
Commonalities	Each project has a clear "artistic vision" that articulates a physical outcome			
Positive Outcomes	1. Offers a new paradigm for what public art can look like on a large scale 2. Revegetated a Brownfield with help from local youth 3. Created tax breaks for truck drivers (policy-making in disguise) 4. Dialogue with emerging environmental art practice, such as Sonfist's concurrent project in New York City, *Time Capsule*	1. Abandoned mine reclaimed by artist using mine reclamation funds and arts grants 2. "Pilot" for mine reclamation strategy in PA 3. Wild turkey habitat restoration	1. Temporary re-envisioning of lower Manhattan through major public space intervention 2. Top soil brought on site for wheat planting	1. Worked with local students to construct project 2. Successful bird habitat 3. First time grant awarded to non-science project 4. Visual landmark
Challenges	1. Only partially complete 2. Artists see it as an early work (more recent work not limited by "site")	1. Regulation scaled back design 2. Community push back and lack of understanding 3. Lack of accessibility and visibility?	Difficult to measure "success" as remediation effort	
Lessons	Pushed Harrison's to think more broadly about their practice as artists/impact on natural world.	Working within regulatory framework requires compromise. Getting project accomplished more important than specific aesthetic.	Temporary events, while limited physically, can leave lasting impressions.	Importance of good partners and relationships
Issues to consider	1. An example of coercive engagement for ecological "good"? 2. Reliance on art world mechanism (commission) for support	Why do so many "pilot" projects never go beyond that stage?	Impossible to measure its direct impact on site, but highly public location meant visibility and replicability	Long-term monitoring in place, but how will it withstand over time?

In summary, the four case studies in this chapter illustrate a genre of individual artworks where artists undertake environmental remediation efforts as part of a work of art. Positive outcomes include pioneering new modes of creating public art and disrupting everyday life with striking, uncanny urban experiences in the cases of *Spoils Pile Reclamation Park* and *Wheatfield*. Engaging with communities (particularly

youth), and successfully working outside of the art realm with public agencies and regulators was part of each project to varying degrees. Challenges included the inability to fully realize projects as desired due to regulatory or institutional pressure and limited access and longevity, in the case of *Spoils Pile* and *Twin Stupas*. For *Wheatfield*, while visually striking, there were no metrics established for measuring the success of the remediation. The cases show how artists relinquish artistic autonomy and begin negotiating outcomes. The importance of good partnerships and relationships becomes evident. With respect to funding, *Twin Stupas* and *Veden Taika* introduce the notion of "pilot programs" as a means of getting atypical remediation projects off the ground, and *Spoils Pile* shows how regulation can work in favor of non-traditional cleanup efforts.

CHAPTER IV

Post-facto artist engagement

The chapter title "post-facto artist engagement" refers to the different ways that artists are engaged in an environmental remediation project after a remediation technology has been selected. In the case of *Byxbee Park* in Palo Alto, California, the design team, which consisted of two artists and a landscape architect, was selected after the landfill was already capped and sealed. They had no say as to the techniques or strategies that were used carry out the capping, but were confronted with the challenge of creating a design scheme that worked with the constraints of the landfill below. In the case of *North Waterfront Park* in Berkeley, California, while the landscape architects were considering alternative remediation technologies for the landfill, the artist was brought on nearly one year after that process began and was not part of the original RFP proposal. As such, her engagement was "post-facto" in a different sense. Similarly, in the case of *Wingfield Pines* in Allegheny County, Pennsylvania, the artist was invited to join the design team after the basic remediation strategy was established. Here, however, the treatment system for Acid Mine Drainage is an exposed passive infrastructure, and the artist was invited to bring an experiential and interpretive dimension to the public recreation/conservation area.

Landfills

Byxbee Park and North Waterfront Park (since renamed Cesar Chavez Park) are both former waterfront landfills located in the San Francisco Bay Area. Their obvious similarities—they are both reclaimed landfills where an artist-landscape architect team was invited to design a park in the late 1980's—provide a platform from which they can be critiqued. Artistic attention on landfills began early in the environmental art movement (see Patricia Johansson's Garden Cities: Turtle Mound, 1969). Changes in the regulation of solid waste, water and air, a scarcity of open space, and public outcry led to an increasing number of landfill projects throughout the 80's and 90's, many of which invited designers and artists to work on the team with engineers and scientists.

In her thorough discussion about landfill reclamation in *Designing America's Waste Landscapes* (2004), landscape architect Mira Engler characterizes landscape reclamation projects into four broad typologies: restoration, utilitarian, cultural monuments, and interpretive. The last two groups, she explains "endow dumps with identities that transcend, yet build on their former realities and expose complex and competing demands, regulations, interests, desires, fears and dreams"[1]. Engler characterizes Byxbee Park as falling into the final category—interpretive—by endowing the landfill as a place that is open for discovery and individual interpretation. While she does not specifically mention North Waterfront Park in her survey, I suggest that the artistic portion of the plan falls within the cultural monumental paradigm, whereas the process-based landscape design would better fit into a fifth category she mentions, "Dumps of the Future." In this way, North Waterfront Park begins to respond to her criticism that "only a few of those designing dumps pondered how technical regulations and the technology required can become an opportunity rather than a constraint" [2]

Byxbee Park

Byxbee Park boasts an unusual location. Located in a remote area of the city of Palo Alto away from any residential community and surrounded by large single-use parcels, including a municipal airport, a re-

1 Engler 2004, 102
2 Ibid., 100

FIGURE 12: Pole Field at Byxbee Park, Palo Alto CA © www.panoramio.com

cycling plant, a golf course, the freeway and the still-active portion of the landfill, it is not a place one would stumble across (which is also probably why it was selected as a landfill site). However, with the capping of 45 of the 120 acres of the 60-year old landfill in the mid-80's, and the sweeping waterfront views offered at the site, the parcel's allure make it an interesting place for human and environmental intervention.

In fact, the project began when a local group of activists pushed the director of Palo Alto's Department

of Cultural Affairs, Leon Kaplan, to bring on an artist to spearhead the design of the proposed recreational area on the capped landfill. Kaplan selected San Francisco artist Peter Richards, who requested that artist Michael Oppenheimer also be added to the team. Next, George Hargreaves and Associates were selected as the landscape architecture firm, a decision that both artists were enthusiastic about. The team was tasked with working with the Public Works Department and the citizens of Palo Alto to revisit an earlier plan for the landfill. The relationship between the team members, as described by Peter Richards, was extremely collaborative. Says Richards, "no ideas were carried out unless it came out of a three-way decision. No one could pull out their bag of tricks."[3]

The main design idea was a simple one: let the design be informed by its context. It was, however, a difficult context to work from. Rather than ignoring the dystopia of uses surrounding the site, the team chose to draw attention to them. A sequence of chevrons arranged in consecutive arrow formations literally points to the airport next door, and provides a signal to the stream of small planes flying overhead. At the keyhole where a gas flare of methane from the landfill is released, a smooth surface on the ground allows onlookers to view the shadow patterns created by the flare. Wind is another theme that the team developed through several new elements: a more recognizable sculpture,

FIGURE13: Chevrons are aligned to guide airplanes. Photo by Jessica Fain

3 *Personal interview with Peter Richards, 12/21/10*

Wind Wave Piece, which consists of a two-pole structure with lines suspended between them to create a profile of the wind patterns, tear-shaped mounds in the landscape that refer to the prevailing wind patterns, and tall grasses specifically selected for how they move in the wind. A field of poles punctuates the landscape, using vernacular objects—telephone poles—to create a perching spot for birds.

As the design and construction process progressed, the team confronted challenges both technical and organizational in nature. From a landscape perspective, there were restrictions imposed from working on top of the landfill. Lined with a three-foot clay cap and a layer of topsoil, they had to be careful not to plant anything that would puncture the cap. Therefore, large trees and other vegetation in a standard park planting palette could not be used, challenging the team to think about other ways to create shade and articulate the space.

Several times, the team found themselves at odds with the Department of Public Works, who, according to Richards, was quite conservative and "lacked an appreciation for 'meaning'...They just didn't understand what we were trying to do." In what was described as an "educational experience," the team challenged the DPW's regulations and standards, often resulting in issues being brought before the city council. Fortunately, the same group of activists that supported bringing the artists to the project in the first place were there to defend them again. A significant amount of politicking was required: hours of talking, calling, advocating, and lobbying were necessary to push the project to completion. Richards points to Kaplan as the unsung hero of the project, their behind the scenes advocate who kept the project alive. In 1993, Byxbee Park won an ASLA award and Richards hosted the NEA symposium "Rising above our Garbage" at the site in 1994.

Engler, while generally praising Byxbee Park, notes that on one major front, the project "regrettably...makes no intentional gesture to integrate an adjacent operating landfill within view of Byxbee Park."[4] The paradox of calling attention to other difficult conditions but not the most obvious one—the adjacent landfill and its explicit relationship to the now concealed site beneath the park—was not lost on Engler. She also brings up the salient point that landfill reclamation can and should be about more than the landscap-

4 *Engler 2004, 111*

ing of a landfill after its been capped. She writes,

> Also stifling creativity is the tendency to consider a site merely as an object, another commodity, rather than as a living, changing sculpture both during and following its operation as a dump. The real challenge of landfill reclamation is to incorporate construction and closure technology, and the ecological processes at play as part of the overall design language of the new place—as form-givers, at once utilitarian and aesthetically and intellectually satisfying.[5]

FIGURE 14: Aerial of Berkeley landfill
© www.johnnorthmoreroberts.com

5 *Ibid.*

Conceptualizing the landfill as "continuously changing"—a non-static process rather than a problem to conceal and build upon—challenges both engineering and artistic norms. As the next case study shows, such an approach provides compelling and vastly underexplored opportunities—but the regulatory challenges often render such initiatives untenable.

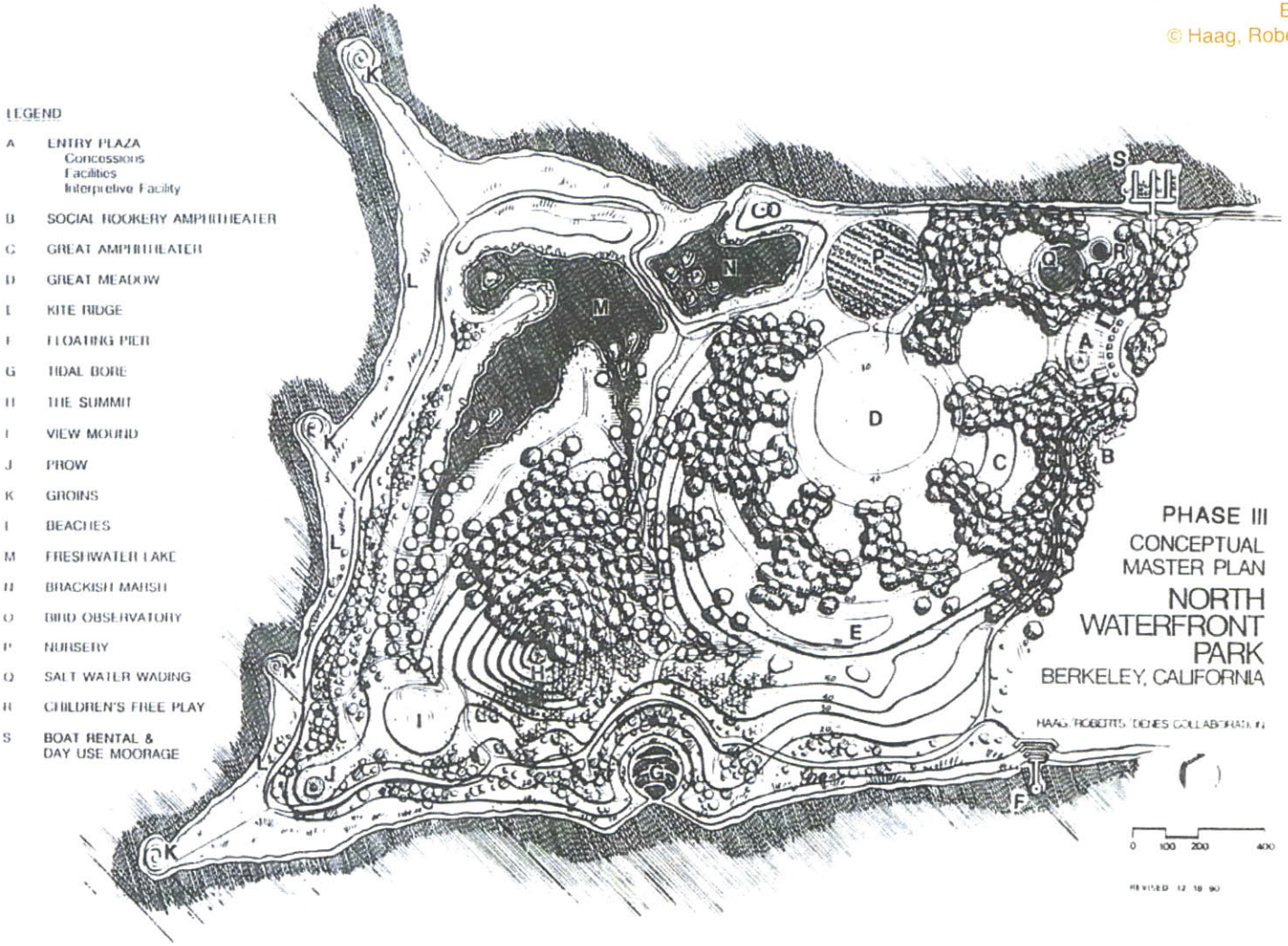
North Waterfront Park Conceptual Master Plan

On the other side of the San Francisco Bay in Berkeley, the North Waterfront Park Conceptual Master Plan suggests a parallel vision for a waterfront landfill reclamation park. Although never constructed as proposed, the plan offers a compelling vision for what could be (to quote Engler again) "at once utilitarian and aesthetically and intellectually satisfying."[6] The Berkeley landfill had been the subject of much discussion for decades before 1977, when the first plan to develop it into a park came about. (Earlier discussion had focused on integrating it into the urban fabric of Berkeley, but that plan was abandoned. The landfill continued to receive garbage until it was finally closed in the mid 1980's.) A series of modifications were made to the park plan as changes to the conditions of the capping evolved. In addition, community pressure pushed for a park design that incorporated a stronger environmental approach rather than the then-proposed pastoral park scheme, which included large parking lots and several buildings. This led local activists and advocacy groups such as the Design Advocates Working with Nature (DAWN) to convince the city of Berkeley that a new master plan had to be created. In response to a Request for Proposal that called for joint submissions by landscape/artist teams, the selection committee was split between Richard Haag, a landscape architect from Seattle, whose submission included a scientifically-based approach to natural landfill remediation technology, and landscape-architect John Northmore Roberts/ artist Alan Gussow, who took an ecological systems and community organizing approach. The split committee asked Haag and Roberts if they would consider working together, which they agreed to do, with Haag as the lead designer and Roberts as the project manager. According to Roberts, "we got along famously." They began work in the fall of 1987.

By the next spring, they had developed a fairly clear baseline design based on Haag's proposal. At

6 *Ibid.*

FIGURE 15: Conceptual master plan of North Waterfront Park, Berkeley (1991)
© Haag, Roberts and Denes



NORTH WATERFRONT PARK CONCEPTUAL MASTER PLAN
HAAG / ROBERTS / DENES COLLABORATION

the same time, the same committee members who supported Haag were also interested in getting New York conceptual artist Agnes Denes involved. (Haag had not proposed an artist with his original RFP, instead stating that he would let the local community make that decision. In retrospect this was undoubtedly a poor political decision on his part.) Denes agreed, but when she was asked to join the team, the work and direction of the design was already in full swing and the all-male design team (Roberts, Haag, and several scientists) had established a strong working dynamic.

The conceptual master plan, completed in 1991, envisioned a reclaimed landfill site based on the premise that the "park is designed to be integral with and mutually supportive of the biologically based landfill control system."[7] This basic impulse to take the landfill, clean it up, and transform it into a self-cleansing landscape came from Haag, who had recently completed Gas Works Park in Seattle, and Richard Brooks, the engineer he collaborated with. It was a visionary strategy that looked to treat and decompose the pollutants on site, rather than construct a concealed cap with a complex methane extraction system and flare that would have to be maintained in perpetuity (or until the gas ran out). The team explored biore-

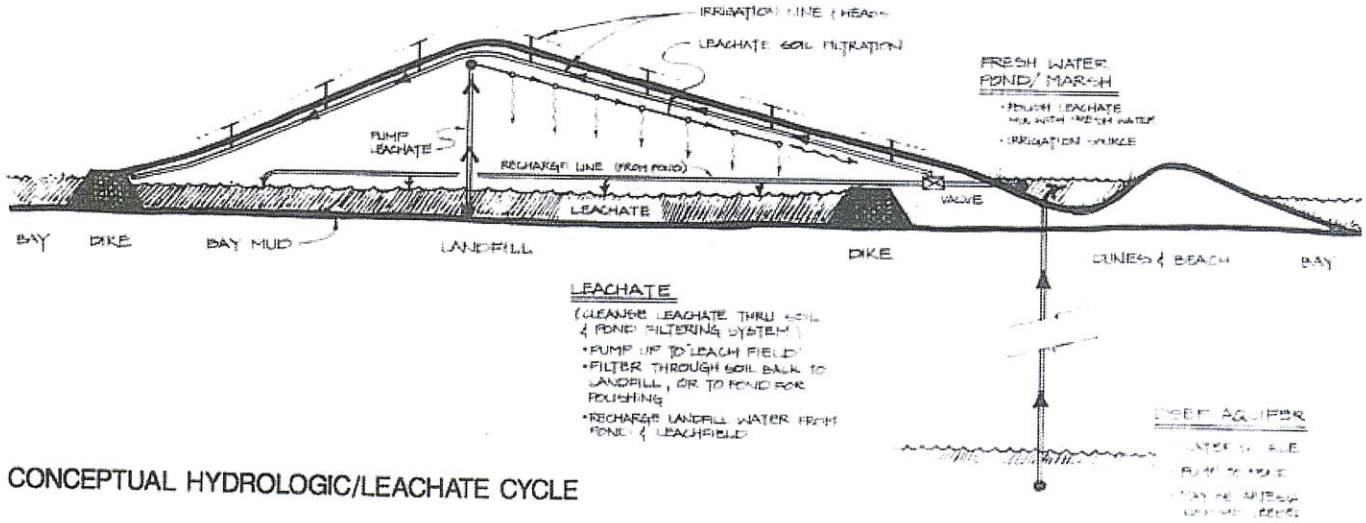


FIGURE 16: Diagram of biological leachate treatment system ©Haag, Roberts and Denes

7 *Haag, Roberts, and Denes 1991*

mediation strategies that were potentially capable of treating gas emissions and leachate through biological processes. At that time in the late 80's, such technologies were not mainstream, yet studies suggested promising outcomes. One contemporary study at UC Irvine on greenhouse gas emissions inspired Richard Brooks to suggest that Roberts contact the scientist to see if a similar principle might apply to the landfill, a major producer of methane gas. After testing and analyzing the soil, the scientists found that the soil was actually actively metabolizing the methane, consuming 70% of methane produced in certain soil conditions and thus reducing its output. The scientific results supported the team's proposal to use microbial bioremediation techniques as the technical basis for the park plan.

Furthermore, they explored biological treatment of leachate—the water trapped within the capped landfill—utilizing organic soils and treatment wetlands. Bioremediation would cleanse the leachate to meet water quality standards; in turn, that water would be used to irrigate the rest of the park, support wetland habitat and aid in the decomposition of the landfill refuse (see diagram below).

Although the report cites various cases studied where similar water treatment systems have been utilized successfully, it cautions that such systems had not been applied to landfill conditions. As such, another component of the plan is nursery/test plot/growing sites, where they could test appropriate vegetated species to meet the needs of the treatment system, and then grow them for planting throughout the site. The sites would also function as a primary interpretive facility for the Park while under development. This area of the park is called "Eden Again" due to its location near the water where the wilderness and the civilized landscape come together.

The community also viewed restoring the natural ecosystem as an essential element of the plan and it was incorporated into the park design. This included excavation into the capped landfill in order to construct ponds and coastal wetlands at sea level, and utilizing the composted excavated material to create an ecological continuum into the adjacent uplands with soil depths adequate to support substantial vegetation (all the while acknowledging the presumably high cost). To take advantage of the unique combination of salt and fresh water available within one public park, they proposed a series of saltwater inlets for a variety of uses, such as a hard edge for boating, a beachfront, tidal marshlands and even a salt water wading

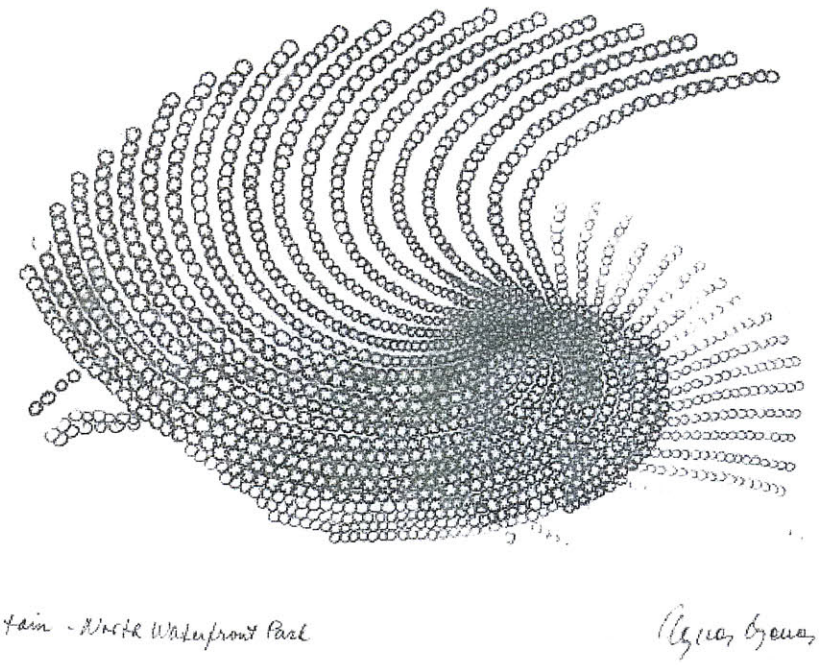


FIGURE 17: Sketch of *Tree Mountain* by Agnes Denes. Image from *North Waterfront Conceptual Master Plan* (1991)

pool. In consultation with an expert on oceanography, they developed a beach-building process that would respond to the existing tidal conditions. The various scientific consultants and the landscape architects felt confident that they had a plausible scheme on hand, but one that would require additional testing and, more importantly, public support, to move to the next stage.

Concurrent with the RFP, discussions were taking place in Berkeley about the role of artists in large public works projects and the possibility of establishing a significant public art program. In light of this, the city of Berkeley called for the inclusion of an "art concept" in the master plan. Once Denes was selected, she made several trips out to Berkeley. As an internationally-renowned artist well-known for her work as a pioneering conceptual and environmental artist, she was exactly the type of artist the advocates were looking for to promote a highly visible collaboration between civic design and a public art process. As a conceptual artist, the hope was that she would work with the design team to conceive of the scheme and push

their design ideas. Unfortunately, however, the team dynamic between Denes and the landscape architects was not ideal, and they were unable to see eye-to-eye with respect to their creative processes. Furthermore, while Denes supported the ecological basis of the emerging landscape design concept, her contributions to that part of the creative process were minimal. Instead, she focused more on the public art opportunities in the park.

The Art Concept outlined in the conceptual master plan presents the entire park as an artwork in and of itself. In this way, the park—an island of garbage—becomes an "expression of human consciousness." Rather than just a piece of land, it is described as a giant ship surrounded by water on three sides and possessing limitless possibilities. The artistic statement poetically alludes to landscape forms that are also in constant flux, and like the landfill itself, are decaying and growing all at once. In addition, the site is also considered as an opportunity for site-specific works of public art. Denes' own imprint is visible in the 17 plausible artworks she designed as models of the types of projects that a commissioned artist might create. They include lighthouse designs, amphitheaters, a rubble sculpture, an entrance plaza, wildflower meadows, and a spiral tree mountain (a staple in Denes' artistic vernacular). Whereas some of the designs are general, others are sketches containing specific descriptions. It is unclear whether they are included merely as inspiration, or as proposals on their own.

In a sense, the unrealized master plan for North Waterfront Park is more revealing about the design and collaborative process than the undocumented Byxbee Park. Reading between the lines, it is possible to decipher the different languages of the various contributors to the plan. For example, using sweeping language to convey the dramatic park experience, Haag writes a second person narrative of what it would be like to tour the park in 2011. One excerpt reads:

> We return to the ridge trail which parallels the row of old Monterey cypress trees and after a short walk, we come upon the experimental coast plantings by DAWN (Design Associates Working with Nature) and the City of Berkeley. In a few hours, in the lifting fog on our right, the open ridge will come alive with the peregrinations of kites and kiters. Below us across the lawn lies a structured staging area for the FLOATING PIER, with steps down to the water. In-

> stinctively we chose the perimeter trail which follows the edge of the Bay over the ridge and down into a steep cirque that holds sea water hostage until the cosmic forces gather to release it into the Bay. Although the waves and the swells in the Bay are barely perceptible, the focused force of three hundred feet of shoreline concentrated into the trough of the TIDAL BORE crescendo into rhythmic eruptions..."

In an era before Photo Shop and fly-through animation, the vivid language allows readers to imagine the park as the designers do. It also functions as a piece of promotion, a textual advertisement of the environmental and artistic possibilities for a piece of land that was then a toxic hazard and eyesore.

Denes takes the opportunity to generalize about the role of the public artist: "We live in an age of specialization...But the artist is not locked into a single discipline. Art is a specialization that need not feed upon itself. It is capable of imbibing key elements from other systems and disciplines, unifying them into a unique, coherent vision." Although she had little involvement in the conceptualizing of the environmental

FIGURE 18: Aerial view of Wingfield Pines

piece of the plan, she advocates for it as a scheme that is an "expression of human values and of our sense of responsibility to each other and to the planet." This language reminds readers of the higher-order aspect of the plan, not only as a place of utility and ecological restoration, but also recalling the landfill itself as a human construct both in its creation and destruction.

Unfortunately, the plan remained only a plan. It was shelved due to three main factors. First, because of the size of the landfill, the city of Berkeley was under orders from the Bay Area Regional Air Quality Control District to comply with landfill gas release standards. However, the city had been negligent for years in meeting their reporting requirements. Thus, despite the Air Quality Board's agreement that the Haag/Roberts/Denes gas bioremediation proposal could be effective, the historic lack of compliance forced the Air Board to require that the city install a highly-engineered methane gas extraction system immediately or face significant fines. The city installed the methane extraction system as required. Second, and in concert with the first factor, was the lack of commitment from both city staff and elected officials to the plan, despite widespread community support. There was simply no one from the public sector willing to undertake such a difficult and complicated project, which would include securing the necessary regulatory agency approvals and the capital development process.

Lastly, the regulatory and legal field was not prepared to carry out a large-scale sustainable infrastructure project. The risks associated with opening up the landfill were too high and the political climate for "green infrastructure" was years from its peak in popularity.

Ironically, within the past year--the exact year that Haag had envisioned his tour of the park--Roberts has again begun dialogue about the project with city officials. Perhaps the era has arrived where the

FIGURE 19: Diagram overlaid on aerial image of water treatment system at Wingfield Pines
© www.alleghenylandtrust.org

years of costly repairs and maintenance of the engineered system have taken a toll on the city and, in a climate where "sustainability" is in vogue, the plan is ready to be revisited.

Wingfield Pines

In contrast to the previous two examples, *Wingfield Pines* addresses another post-industrial issue—Acid Mine Drainage, which is caused by chemical reactions in the ground water of abandoned mines. In 2005, the Natural Resource Council declared drainage from abandoned coal mines as "the most pervasive and widespread water pollution in southwestern Pennsylvania's industrial history."[8] The Allegheny Land Trust (ALT) is a non-profit group in Allegheny County, PA that "helps local people save local land" by purchasing and maintaining properties of scenic, recreational and environmental value. In December 2001, ALT purchased an 80-acre parcel called Wingfield Pines, a former strip mine converted into a now-closed pool club and golf course situated within the Chartiers Creek floodplain. The creek abuts one side of the property. Unbeknownst to ALT at the time of purchase, a borehole from a network of abandoned subsurface mines was releasing 1,500-2000 gallons per minute of iron-laden water into the creek, equaling 43 tons of iron oxide sediment per year, the largest of 45 AMD discharges along the Chartiers Creek watershed. The discharge comes from the Montour 4 and Montour 10 mine complexes, part of a tunnel system that reaches depths of nearly 800 feet and traverses 21,000 acres in the region.[9]

Confronted with this problem, the ALT board had to decide how it should proceed. A remediation system would be a large, capital-intensive project and would potentially divert funding away from other properties they might want to acquire. After some disagreement, the board decided to move ahead with the construction of a passive treatment system that would not only be functional but also allow for educational and historical interpretation. They applied for a $650,000 grant from the EPA, which they received. Altogether, the project budget was $1.2 million.

ALT Executive Director Roy Kraynyk, a landscape architect, took on the role of project manager.

8 *Committee on Water Quality Improvement for the Pittsburgh Region, 6*
9 *Chilcott, Perkovich, and Walton 2007*

Hedin Environmental, an environmental engineering firm, was hired as the lead. Together, they came up with an initial design of the treatment system. "Most systems that are built to treat mine drainage like this are arranged in a series," explained Bob Hedin, president of Hedin Environment. "Here, we thought about the observer and put the ponds around you so the ponds are actually flowing around the center point."[10] The water flows through a wheel of pie-shaped shallow ponds and wetlands before it is released into the creek. People can walk along the berms dividing the ponds, as well as along a boardwalk that transverses the wetlands.

FIGURE 20: Water from horizontal discharge pipe. © www.angelociotti.com

10 *Quoted in Allegheny Front Radio broadcast, "Artful Water Remediation System Opens to Public" aired on 6/09/2010.*

A board member who was familiar with the work of reclamation artist Angelo Ciotti suggested that ALT bring him onto the project. Beyond the initial concept, there was flexibility in the ecological and landscape design, educational opportunities, and some aspects of the treatment systems. The interaction between Ciotti, Kraynyk and the engineers is perhaps best described as creative trial and error. "I would say, 'How about turning the pipe into a fountain?'" Ciotti explained. "But I didn't know how long the pipe should be or how many holes there should be in it. The engineers would figure it out and we would take it from there." This back and forth dialogue helped give the design a strong experiential dimension. Kraynyk saw the value of this process as a healthy balancing game between engineering and artistic elements. "[Ciotti] was a good person to have on the team. With him there, I was more in the middle of the road. Because sometimes his ideas were sort of out there, it put me more in the center and allowed me to have more design flexibility."[11]

Both conceded that there were times when their design visions conflicted, such as with the fountain, which Kraynyk had hoped would be more dramatic with higher water sprays, or with the overall symmetry of the design, which both feel could have been more irregular. Ciotti also sees his contribution as one of economy. As with some of his other work, he pursues artistic opportunities that are also cost-savers. In this case, the conversion of two felled trees, cut down during the building of the filtration pond, into bird nesting areas, a much less costly alternative than hauling them offsite.

In summary~~, the cases in this chapter were grouped together because the artists~~ were invited to join a design team on a remediation project after the remediation technology was selected. Positive outcomes include creative landscape designs that push the design envelope in terms of visitor experience, ecological systems, and habitat creation. An emphasis on public access is present throughout all three cases, although *North Waterfront Park* emphasized the role of public participation in the design process more than the others. Non-artist advocates were key in each case, to varying degrees. Issues of feasibility and viability come up in *North Waterfront Park*, which was not implemented, despite community support. The role of the

11 *Personal Interview with Roy Kraynyck, January 21, 2011*

artist(s) within a design team varies in each case, raising an question: What is the best way to structure a successful collaboration between professions with very different, and at times incompatible, approaches?

TABLE 3: Chapter 4 Summary: Post-Facto Artist Engagement

	Byxbee Park	North Waterfront Park	Wingfield Pines
Commonalities	Projects where artists were invited to join remediation-based projects after the remediation technology was selected.		
Positive Outcomes	1. Implementation of a creative landscape design that "pushes the envelope" through evocation of the nature/industrial elements 2. Good working relationship between artists and landscape architect 3. Significant wetland and habitat reconstruction	1. Community-based vision matched with ecological vision 2. Ambitious model for how landfill can use passive remediation technologies and allow for public access and engagement	1. Positive collaboration between artist, engineer and non-profit organizer/ land owner 2. Publicly accessible piece of green infrastructure that is functional and didactic
Challenges	1. Met resistance from other city departments 2. Design does not address active landfill. Visualizes it, but does not treat landfill.	1. Not enough public sector support to carry it out 2. Poor existing relationship among public agencies stifled creativity 3. Artist's "creative process" did not connect with landscape architects	1. Some lack of satisfaction with physical elements 2. Technical issues with system (beavers are a problem)
Lessons	Importance of an strong "believer" in public sector, and community advocates	Ambitious plan that met the ideology of the community but not the realities of the political/implementation situation	Facilitated process between artist and engineer by NGO
Issues to consider	Policy decision to select artist, then designer.	Public art policy ideal vs. reality of collaboration	Lack of acknowledgement of the artist's role in publicity about the project. Why?

CHAPTER V

Artist as Activator

The projects discussed in this chapter—Michael Singer's *New Haven Long Wharf Master Plan*, Mel Chin's *Fundred/Operation Paydirt*, and a more in-depth look at STUDIO for Creative Inquiry's *Nine Mile Run Watershed Plan*—offer three perspectives on artist-sponsored activism to effect large scale changes impacting the physical environment, policy, and social conditions. While fundamentally addressing toxic environmental conditions, they all also emphasize the wider social implications of the problems they address, and in doing so, call for buy-in from a range of actors—community members, politicians, scientists—to make the work meaningful across disciplines. As activists, their work reflects a Kepesian view that before ecological disaster comes civic disaster, and as such, their role is to anticipate it. After building a constituency, each in his or her own way distributes the responsibility of the initiative to other parties as a necessary step in the realization of the artwork. Kester's idea of a dialogical aesthetic resonates with these cases, as they are as much about the process as they are about any formal output, whereby art is a "context provider," not only a "content provider".

New Haven Long Wharf Master Plan

Artist Michael Singer is known for "hijacking" percent-for-art commissions and creating ecologically informed visions for municipal planning and infrastructure projects. The first example of this was in 1988. In response to a public art competition in the city of New Haven, Connecticut, his winning proposal used the public art funding as a means of financing an urban plan for the Long Wharf Master Plan, creating a vision for a mile-long harbor site that was to include harbor cleanup, along with educational, recreational, and cultural programs. Singer was one of several artists invited to submit a proposal for a supposed "gateway artwork" along the I-95 corridor. Others invited included Richard Serra, Martin Puryear, Ellyn Zimmerman, and Claus Oldenberg. Singer was the clear outlier in this group—his previous work tended to be ephemeral interventions in secluded, natural settings. Thus, whereas the other artists proposed objects (Oldenberg, for example, proposed a giant hamburger to celebrate New Haven's claim as the hamburger's birthplace), Singer proposed a process: he wanted to understand how the community values the site and thus, how it could be transformed for more active community and ecological use. His competition submission was a written proposal explaining how he would lead a team of planners, architects, engineers and social anthropologists to survey how a park on that site could connect with the city and citizens of New Haven. In this way, it would not only mark the location of a place as a gateway to the city, but actually transform it into an ecological, didactic waterfront marking over 400 years of maritime and industrial history.

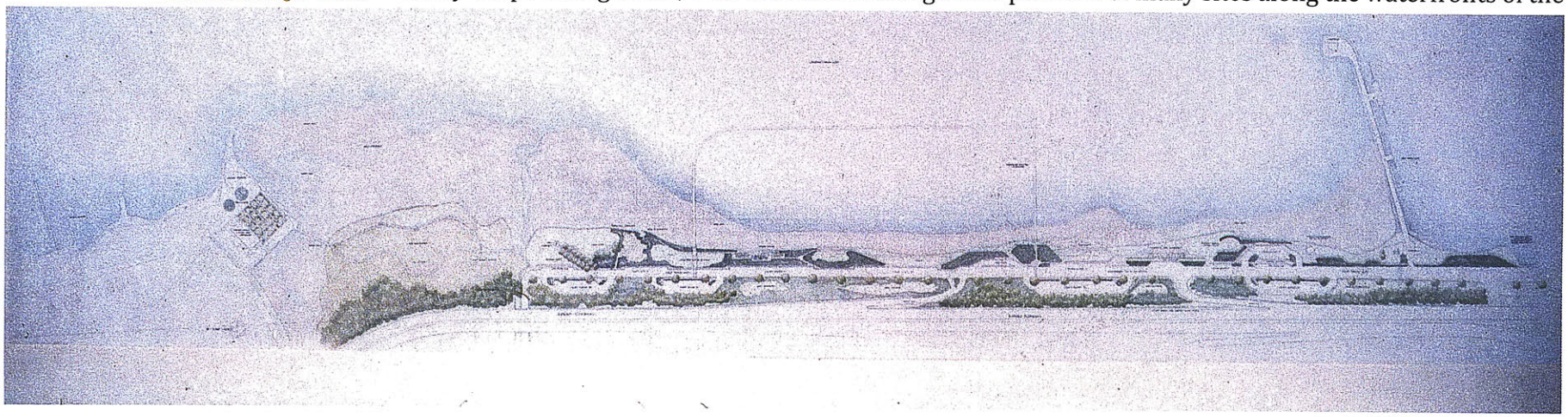
Singer was stunned when he won. Working with New Haven's Parks Department and local community organizations, he approached the project at first as a respectful listener trying to absorb the context before coming back to them with a proposal. The project went on for many years and with many iterations. The proposal money was quickly used for research on the community, the site, and the site's environmental conditions. Simultaneously, US DOT put forth a proposal to expand I-95 and obliterate the waterfront altogether. The immediate community reaction to that proposal catalyzed the community in support of the vision that Singer helped "visualize and coalesce."[1] The concept the team developed was to envision the waterfront as a place of human intervention: an Indian

1 *Personal Interview with Michael Singer, 1/26/11 (phone).*

settlement between two rivers, a Dutch colony, a farming area that caused the rivers to silt and land to be filled in, an active port with the long wharf to accommodate large vessels, the construction of the highway, and finally, a wharf that today extends 100 feet into the Sound. Singer proposed that a garden containing specific areas of dirt shipped to the site from all around the world be built to commemorate New Haven's international connections. He also designed an interactive tidal garden to reveal the Long Island Sound's water levels. A storyteller was sent into communities to gather stories. Food and cultural amenities were to be incorporated in the restoration of the Long Wharf itself and add to the vendors already at the site.

In terms of the environmental perspective, Singer worked with Dr. Paul Mankeiwicz of the Gaia Institute to understand the water systems in Long Island Sound. Mankeiwicz told him that the Sound suffers from hypoxia—lack of oxygen—and as such is essentially a dead body of water. The fish were gone and very little life was left in the harbor. Facing such a dismal report, Singer asked whether there was any intervention at the waterfront that could address the problem. Absolutely, said Mankiewicz, who suggested the rebuilding of the wetlands and the fostering of oyster beds and native vegetation to create an opportunity for a natural filtration system. "Back then," Singer said, "this was really revolutionary."[2] They met up with the Army Corps of Engineers, who were also looking at the problem of many sites along the waterfronts of the

FIGURE 21: Master Plan for New Haven Long Wharf (1989)
© Michael Singer Studio



2 *Ibid.*

Sound. Singer and his team developed a regenerative scheme for wetlands, sand dunes, islands, and boardwalks. His team also developed strategies to deal with pollution in the Sound caused by the highway. It was the early 90's, and they were looking to the next century and working at the leading edge of planning and design.

And it never happened. Not as a comprehensive plan, at least. Some pieces moved forward, while others died. Singer was hired by different organizations for different projects. At the southern end of the site, for example, a defunct WPA era water treatment facility stood abandoned. Although the tanks no longer met current permit regulations, the structure itself was in good condition. The Sound School from Bridgeport, an alternative public high school program, came forward as a possible tenant. The school is a highly successful public vocational school that focuses on aquaculture and marine trades. Working with the Board of Education, he helped design a vision for a new school facility at the treatment facility site.

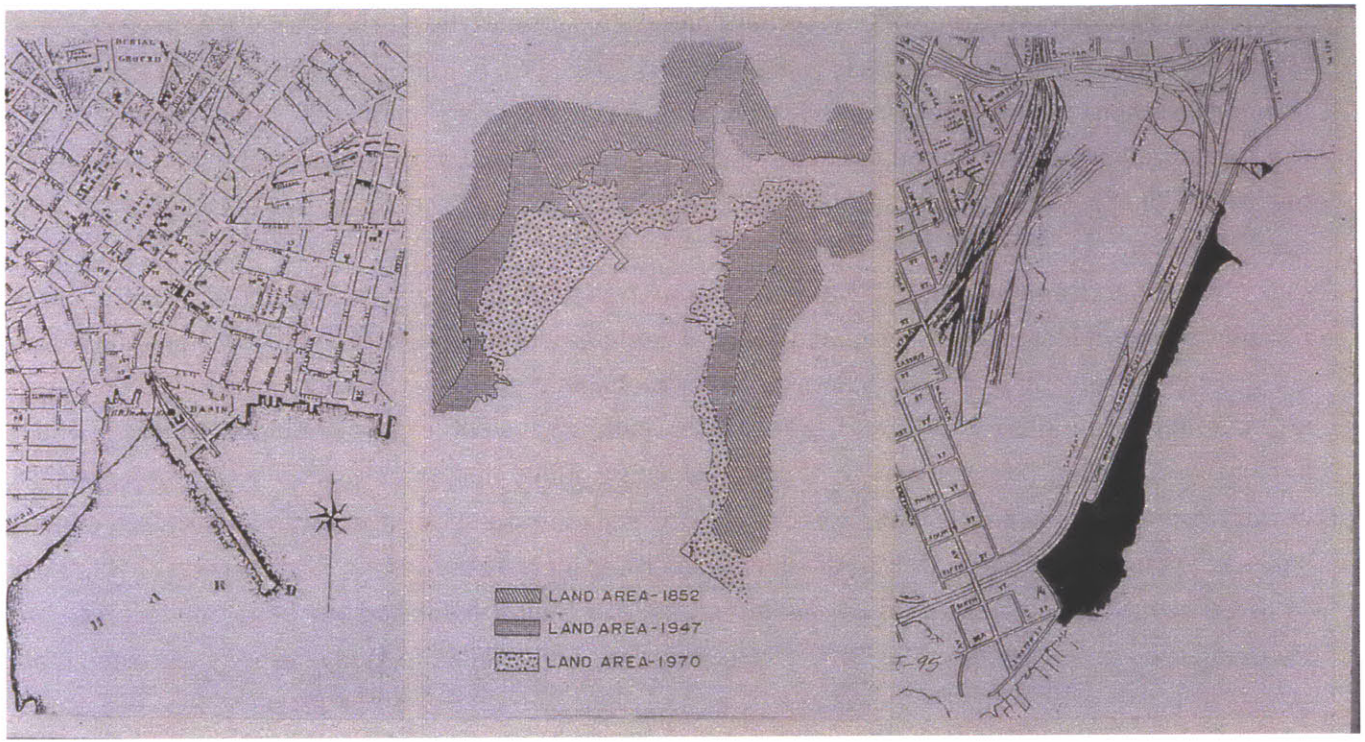


FIGURE 22: Planning studies for New Haven Long Wharf (1989) © Michael Singer Studio

Although it was not built exactly as Singer had designed it, the final project did include some of his plan's essential elements, such as an infill of wetlands, a pier, and the reuse of the old treatment plant's foundations. Despite his big ambitions and their subsequent lack of realization, it was a pivotal project in Singer's career. (As will be discussed further in Chapter 6, the *West Palm Beach Waterfront* project presents how his career evolved over the next 25 years.) "It opened my mind about how an artist could be interactive with the community as well as provide leadership and direction for public agencies," Singer explained.[3]

Fundred/Operation Paydirt

Conceptual artist Mel Chin is perhaps best known for his work Revival Field, a sculptural collaboration with scientist Rufus L. Chaney that utilized phytoremediation—specifically, hyperaccumulator plants that intake heavy metals from soil—at contaminated sites around the world. His current project, *Fundred/Operation Paydirt,* similarly investigates remediation strategies, but in this case has a clear environmental justice message attached. After New Orleans was devastated by Katrina in 2005, Chin visited the city, "not to get inspired by the destruction but to be compelled to act." He was struck not only by the sheer wreckage, but also by the psychological and social implications of the storm: "The magnitude of the disaster required a response concept of equal magnitude."[4]

An announcement from the National Resource Defense Council claiming that the storm had redistributed soils and increased levels of heavy metal contamination captured Chin's attention. The EPA, however, released a contrary message, claiming heavy metal contamination did not get worse. Chin knew that lead contamination both in soils and air-born is a leading cause of lead poisoning in children, which has been proven to negatively impact IQ, behavior, learning ability and early-onset health problems. Curious, he approached Dr. Howard Mielke, a toxicologist/urban environmental expert who had worked extensively on lead contamination issues in New Orleans, to help sort through the conflicting messages. To his surprise, Dr. Mielke confirmed the EPA's conclusion but added that New Orleans had one of the highest rates of lead contamination in the country. The irony of this situation compelled Chin further when he learned that high

3 *Ibid*
4 *Personal Interview with Mel Chin, 3/21/11 (phone)*

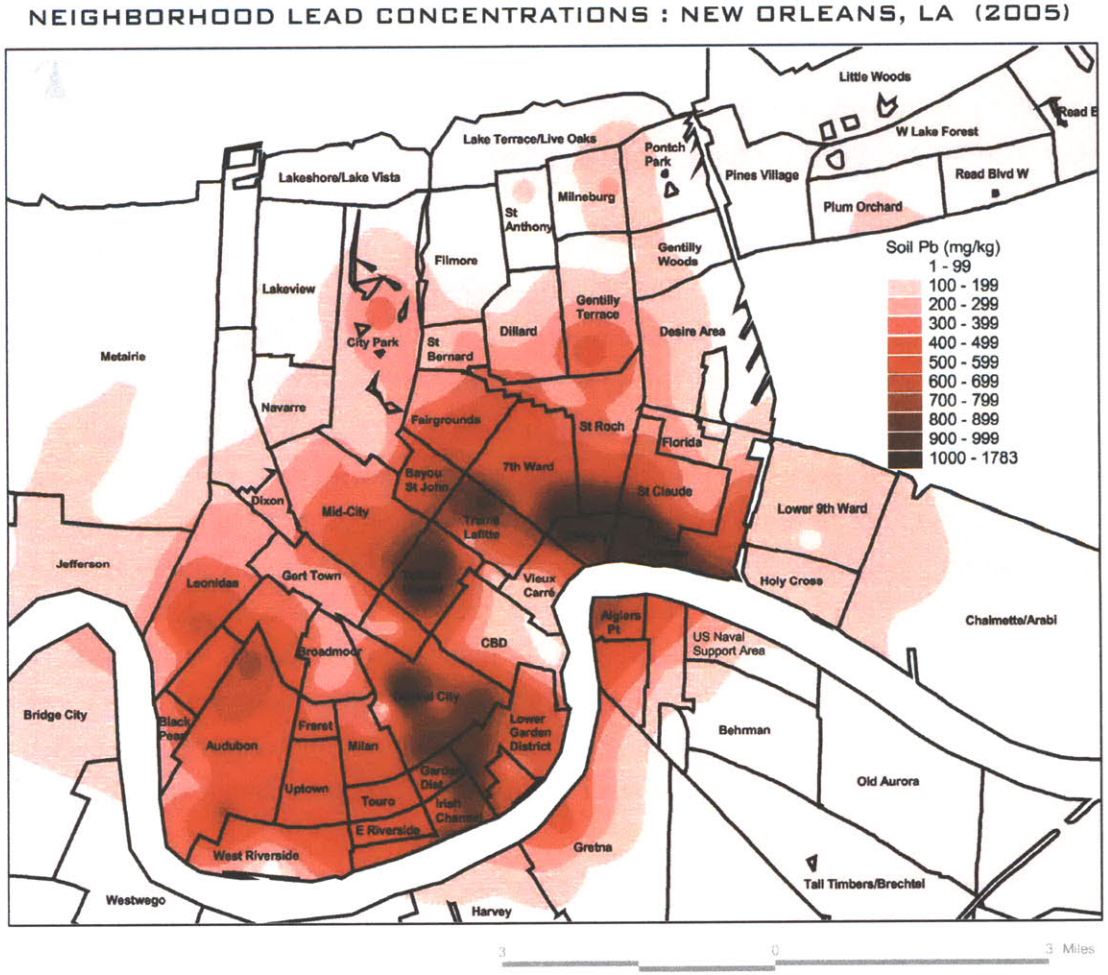


FIGURE 23: Map of lead concentration in New Orleans © www.fundred.org

levels of toxic soil corresponded to high levels of blood poisoning in children. It solidified in his mind the dangers of lead contamination and how it impacts inner-city urban youth. The storm did not change the fact that New Orleans has the second highest lead contamination level in the country, but instead proved that solutions that can reduce its toxicity do exist, since new layers of sedimentation caused by the flood actually capped the soils that were most contaminated. Through *Revival Field* and his continued interest in phytoremediation, Chin knew that there were no plants capable of extracting lead from soil. "Go ahead and plant your sunflowers...but it's a bogus solution," Chin explained. "The poetics are nice... but you need to do the science."[5]

The project that emerged had a strong program logic utilizing a two-pronged approach: First, *Operation Paydirt* seeks to find a viable solution to lead contaminated soil by not only capping the contamination with a layer of topsoil, but by transforming the lead itself into a non-toxic state. Working with Dr. Mielke from Tulane and Dr. Hunt from University of Texas Arlington, Chin developed a "Treat-Lock -Cover" strategy (TLC for short) that treats the soil with calcium phosphate, which is neutralized through the formation of complex minerals (pyromorphites) and then covered with three to six inches of clean sediments.[6] Meanwhile, *Fundred* aims to build a community of stakeholder youth to impact policy decisions and find a funding solution for the scientific solution. Estimating that the remediation proposal would cost $300 million to carry out in New Orleans, Fundred invites youth in New Orleans and throughout the country to create their own Fundred dollar bill (fictitious 100 dollar bills that young artists draw). "You need some kind of democratic expression for children who are the most affected by the threat of lead," Chin said[7].

The goal is to create 3 million Fundreds equaling the $300 million required to cover the costs, collect them in a bio-fueled armored truck and deliver them to Congress in exchange for the actual funding for the cleanup.

The science portion has taken longer than expected to develop. Based on the patented concept of Apatite II, an in-situ technology using phosphate-induced metal stabilization (PIMS) that appears to effec-

5 *Ibid*
6 *www.fundred.org/about/operation-paydirt.php*
7 *Personal Interview with Mel Chin, 3/21/11 (phone)*

tively convert lead into an insoluble, stable phase at military artillery sites.[8] Chin is working with scientists to determine if it can have the same impact in a residential context. National exposure of the project led Steve Calanog of US EPA Region IX to contact Chin and form a partnership. Prior to this work, the EPA's default strategy for high levels of lead contamination was to haul it off-site, which is costly and requires the construction of new landfills. Dr. Hunt, the scientific advisor for Operation Paydirt, shared his work with the EPA. Currently, the EPA is in the final stages of verifying the protocol for the mineral neutralization of lead in residential neighborhoods in Oakland, CA. These demonstration sites will set the necessary precedent for implementing a similar protocol in New Orleans. In addition, in March 2011, HUD announced a $500,000 grant for University of Texas-Arlington through its Office of Healthy Homes and Lead Hazard Control to test the ability of Apatite II to sequester soil lead, and demonstrate that the process is an environmentally acceptable remediation agent because it does not leach from the soil.[9]

Over the course of several years, 380,000 fundred dollar bills have been created. While this is an impressive feat (each person is only allowed to make only one fundred), the 3 million Fundred benchmark is quite distant. To date, one cross-country collection mission occurred in 2009/10 with the armored truck traveling 18,000 miles and visiting over 120 schools. Many more schools participated remotely, with teachers initiating the process in their classrooms. An interactive map on the Fundred website allows the public to track the number of Fundreds created by state. Other notable successes have occurred along the way, including the installation of the Safehouse (a reconstructed home to store and exhibit Fundreds with a giant bank vault doorway) in a New Orleans' neighborhood where lead contamination was as high as 4000 ppm, the "Love Where you Live" community event (a press conference in which Chin and the scientist collaborators sat side-by-side responding to questions), and the daily creation of Fundreds. Still, Chin insists that the project must be seen through to completion, and seems to possess the determination to do so, despite setbacks and frustrations. Unlike the other projects discussed in this paper, Fundred/Operation Paydirt is a work in progress. The recent HUD grant and positive results at the EPA test sites in Oakland are hopeful indicators of its progress.

8 Wright et al. 2007
9 Department of Housing and Urban Development. March 15, 2011.

While Chin spearheaded the project, he is clear to state that it is not about him. The thousands of artists who draw the Fundreds, as well as many key collaborators, drive the efforts. The effort started with a small core group, including Mary Rubin (Director of National Affairs), Amanda Wiles (Director of Operations) and Transforma, a non-profit arts group established post-Katrina to "imbed the arts into the decision-making processes that affect all neighborhoods and communities."[10] The pro-bono contributions, including those from the science advisors, reveals the depth of the grassroots effort underway.

FIGURE 24/25: Fundred installation at the Safe House, New Orleans
© www.fundred.org

FIGURE 26: Sous Terre Armored Truck
© www.fundred.org

10 www.transformaprojects.org

The Nine Mile Run Greenway Project

The Nine Mile Run Greenway Project (NMR-GP) emerged when a group of artists from Carnegie Mellon's STUDIO for Creative Inquiry, part of the Department of Fine Arts, observed that a proposed housing development in the city of Pittsburgh was turning its back on an important environmental resource, the Nine Mile Run stream. Hidden between two steep slopes of slag created from over 60 years of dumping from local steel mills, the master plan for the Sommerset neighborhood development proposed to fill in the valley and channelize the river into a culvert in order to maximize development potential. The 360-acre brownfield, described as a "moonscape" where vegetation could not grow, was an ugly reminder of the devastation caused by the mining industry, and as the largest area of undeveloped land within city limits, the city was eager to see it repurposed for residential use. However, the river that ran through the slag valley, connecting Frick Park, a large urban park, with the Monongahela River, was a reminder of the natural systems still operating under distressed conditions. The three lead artists—Bob Bingham, Reiko Goto and Tim Collins—decided to act.

Between 1997-2000, the team, in collaboration with a range of other researchers and activists, including environmental lawyer John Stephen, environmental historian Joel Tarr, environmental and civil engineer John Buck, and many others, facilitated an in-depth environmental remediation planning process. It consisted of several research pieces on the environmental and historical conditions of the river, community meetings with stakeholders and experts, design charettes, and awareness-raising efforts. There was also a concerted effort to frame the discussion within an art historical and philosophical context, through a series of articles (mainly by Collins and Goto) exploring the significance within an art theory trajectory.

A generous grant from the Heinz Foundation, along with support from the City Planning Department, gave the project its wings. Special Projects Manager Joan Blaustein at the City Planning Department was the project's lead advocate, acting as the mediator between the housing developers of the top of the slag heaps and the river restoration at the bottom of the slopes. "At the time, there was a conversation going on in the city about establishing a public art program," Blaustein explained. "So when the artists from CMU approached us, there was an openness to their contribution. They submitted an interesting enough pro-

FIGURE 27: Aerial photo of slag heap and Nine Mile Run before restoration, Pittsburgh, PA. From "Ample Planning: A Community Dialogue" (1997)

posal and they had spent enough time in the park that they were legitimate stakeholders, such that my colleagues and I took it fairly seriously."[11] In the end, the city adopted their proposal, committed to the stream restoration, and in doing so, had to reduce the amount of planned housing units from 1700 to 1200.

A series of publications and research documents catalogue the process and provide a wealth of information on the stream. *Ample Planning: A Community Dialogue* (1997) is a 300-plus page report documenting the first year of planning efforts. It introduces the project philosophy, provides essays on the art, ecology and science, contains reports from each sub-committee (History, Context and Policy Advisory Committee, The Stream Advisory Committee, The Community and Ecology Advisory Committee, The Sustainable Open Space Advisory Committee), and includes a reflective essay on the year's work (successes, failures, next steps). *Nine Mile Run Watershed: Pennsylvania Rivers Conversation Plan* (1998), sponsored by The Pennsylvania Department of Conservation and Natural Resources, Rivers Conservation Program, focuses on the specific ecological conditions of the site. *Re-Evaluating Stormwater: The Nine Mile Run Model for Restorative Redevelopment* documents four design charettes exploring small-scale retrofits along the stream that would both restore the hydrology of the watershed, mitigate storm water runoff and sewer overflows, and contribute to cultural and economic revitalization of urban spaces. In addition, a series of research papers were created on the topics "History and Context", "Policy and Management", "Biology", "Land and Slag" (including a 2001 report *Revegetation at the Nine Mile Run Site: Final Report*, sponsored thorough a US EPA Sustainable Development Challenge Grant, and a 1997 report *Nine Mile Run: A Study of the Reclamation and Sustainable Redevelopment of a Brownfield Site*"[12]) and "Stream" (including maps, biodiversity report, a study of riparian plants, stream test findings, a fish survey, water retention discussion, and

FIGURE 28-30: (top to bottom) Looking up at slag heap; Educational and base camp trailor set up on site; Community meeting. From "Ample Planning: A Community Dialogue" (1997)

11 Personal interview with Joan Blaustein. 3/11/11 (phone).

12 A joint project conducted by students of the Department of Engineering and Public Policy, Department of Social and Decision Sciences and the H.J. Heinz II School of Public Policy and Management at Carnegie Melon University

a section on combined sewer overflows). From this enormous body of research, it literally seems that no stone was left unturned.

Touring the site today, it is not apparent that there is an "artists hand" in the design, nor do any remnants of the dead landscape reveal themselves. Rather, it looks like a fairly healthy stream that meanders through wetlands crossed by pedestrian walkways within the Frick Park portion of the watershed, and then curving naturalistically at the Frick Park extension before straightening out at its final run to the river. With the artists' trailer gone and the slopes now grown over, their mark is not visible on the landscape in a distinguishable way. According to Bingham,

> We got asked a lot: So where's the art? We had to make it clear what our research is. We say to them, this is community-based art. We are facilitating a dialogue. It is about place making, not about artful gestures...the big picture...the planning...facilitating the process. It just happened to be the artist that grabbed onto it first. Otherwise, the Army Corps or developers would do it and screw it up. It was a way of getting people's voices into the arena.[13]

In more formal terms, the team established four goals for the initiative:

1. Establish artists as a creative source for environmental and community change;
2. Encourage dialogue about complex post-industrial issues utilizing contemporary technologies;
3. Identify and model sustainable approaches to urban open space development; and
4. Promote bio-diversity and managed succession standards for brownfields reclamation.[14]

Any mention of aesthetics is conspicuously absent from their dialogue. Operating from an ecosystems perspective, the process by which the space is transformed guides the endeavor, an academically rich, holistic approach to the remediation of the site on an ecological, social and cultural level.

Somewhat unsatisfied with his answer, I tried to push Bingham on whether there were any aspects that identified this an artist-led initiative. And, while he was reluctant to agree with me, I see some of the small temporary projects as more "artistic" in nature—for example, students from Bingham's Environmen-

13 *Personal Interview with Bob Bingham, 1/19/11*
14 *Nine Mile Run Greenway Project website. www.nmr.collinsandgoto.com*

tal Sculpture class did installations on the site, and others helped environmental engineer John Buck create aesthetic configurations for test plantings on the slag slopes. An onsite trailer for education and outreach with a planted roof demonstrated how vegetation could grow on non-traditional surfaces and provided a headquarters for tours, research and education. A video "View of Nine Mile Run: A Landscape Transformed by Industry" offers four simultaneous views, and four separate perspectives on the site. A series of exhibitions at art institutions also exposed the project to a range of audiences that may not have otherwise been exposed to the work.

This process could be called creative activism. "In my mind, their most compelling technique was taking people down to the site to see it and experience it for themselves," Blaustein explained. Tours brought in all types of people down to the site, from the mayor to community residents. "You bring people to the site and they just go 'wowwww,'" said Bingham. "It especially stood out before the slopes had vegetation on it. It was just grey. Here was this beautiful stream, this ugly slag and you'd just get it being on-site."[15] Despite this physical division between the housing development and the stream restoration, the two projects were mutually dependent on one another. According to Bob Beppe, a former staff member at Pittsburgh's City Planning Department, there was a convergence of forces and the stream restoration wouldn't have happened on its own. Rather, the Studio provided the "creative grease" to make it happen.

With different approaches and interests at stake, how did the city manage the developers and the environmentalists concurrently? Essentially, a line was drawn between areas of involvement. The artists focused their attention on the bottom of the slag slopes, and the developers did their work on top. From the point of view of the developers, this was an acceptable arrangement since a third party was handling the most challenging part of the project—the image of the site as a dumping ground. The artists, it seems, were not particularly interested in the housing portion and were satisfied putting their energy into the public space and the ecological aspects. However, the slag slopes presented a point of contestation: the artists were working with scientists on succession vegetation schemes that involved a slow but ultimately ecologically sounder design. As mentioned above, students were involved in designing some of the test sites and

research investment went into studying how to best achieve slope remediation. However, the developers were operating on a different timeline, and needed to achieve certain grading conditions to move forward with construction. The artists conceded, and the developers used their bulldozers to mix the slag with 50% soil to allow for quicker vegetated growth. "You have to choose your battles," Bingham said. "At that point, we had shifted to the stream and had enough on our plates with that."[16]

Today, the entire stream restoration is complete, a nearly $8 million project carried out by the Army Corps of Engineers, although the team convinced the city to hire a young environmental design firm, Biohabitats Inc. from Baltimore, to carry out the more nuanced aspects of the design. The formation of the Nine Mile Run Watershed Association in 2001 emerged directly from the efforts of the team. During the restoration, the Watershed Association was instrumental in publicizing the transformation. Today, they are responsible for a variety of urban ecology projects designed to directly engage the community in improving the health of the watershed.

16 *Personal Interview with Bob Bingham, 1/19/11*

TABLE 4: Chapter 5 Summary: Artist as Activator

	New Haven Long Wharf	Nine Mile Run	Fundred/Operation Paydirt
Commonalities	Projects where process drives the project. Remediation is the central issue but also show the importance of engaging and developing a constituency of supporters		
Positive Outcomes	1. Interpretative landscape design that "pushes the envelope" through evocation of the nature/industrial elements 2. Good working relationship between artists and landscape architect 3. Influential in Singer's career 4. Construction of adaptive reuse school and wetlands based on Singer's scheme	1. Successfully "saved" a stream by convincing city to revise housing development plan. 2. Created opportunities for dialogue among community members, academics, artists. 3. Leveraged funding from non-traditional arts funders. 4. Establishment of a NGO to continue efforts	1. Raising visibility about a serious urban health and environmental issue 2. Pushing science community to work on new remediation technologies for in-situ lead treatment. 3. Building a constituency of supporters both in New Orleans and around the country through youth and art (380,000 ppl)
Challenges	Limited implementation of design as proposed by Singer.	The housing project and the stream project were siloed during implementation. Could a more integrative approach been achieved?	1. Frustration with funding, process of working on different timelines (funding cycles vs. scientific study) 2. Viability for implementation uncertain
Lessons	Too ambitious?	Importance of public support and an advocate in public sector. Artists leveraging clout of university	Grassroots effort using post-Katrina response energy as a means of bringing attention to pre-existing social urban problem
Issues to consider	Public art funding as mechanism for planning	There is no "artist imprint" today, either physically or in the structure of the organization (except that Bingham sits on watershed organization board)	Artist as integrator for scientific research. Issues of trust/professionalism, if an artists makes a scientific or policy claim, versus "experts"

In summary, this chapter focused on projects where the artist takes on the role of activist or instigator of an environmental cleanup effort. Thus, engaging and building a constituency of supporters becomes a central task. Positive outcomes range from integrating design with nature, challenging existing notions of the public art commission, creating opportunities for dialogue among stakeholders, and pushing the science community to pursue new areas of research. Challenges across all three projects revolve around difficulties with implementation. Again, the importance of public sector support is revealed, as well as the importance of funding from both inside and outside the art world. Finally, the issue of the role of aesthetics is raised, as some of the projects have no discernible artistic imprint.

CHAPTER VI

Integrated Models

The projects discussed in this chapter embrace a pluralistic planning model with integrated collaboration between engineers, artists, planners, and community residents. The two examples provided—AMD&ART in Vintondale, PA and *West Palm Beach Waterfront*—represent different models of how such collaboration can occur. In the case of AMD&ART, a small, interdisciplinary team led a design process for an AMD discharge site in an at-risk, rural mining town. *West Palm Beach Waterfront*, by contrast, is a large municipal project in which artist Michael Singer headed the multidisciplinary design team. These contrasting examples provide insights into each project's strengths and challenges. It is also worth noting that the projects fall at opposite ends of the leaders' careers—whereas AMD&ART largely started as an experiment by historian Allan Comp, Singer's *West Palm Beach Waterfront* comes after over 25 years of experience working as a public artists on large-scale municipal projects.

AMD&ART

AMD&ART, a non-profit environmental group, led a 10-year project that sought to merge art and science while addressing post-mining environmental degradation in Vintondale, Pennsylvania, a small former mining company town approximately an hour east of Pittsburgh. Historian T. Allan Comp organized a multi-disciplinary team of scientists, artists, designers and humanists to look at solutions for Acid Mine Drainage (AMD), which contaminates many rivers in the coal region of Pennsylvania, West Virginia, Kentucky ,and Ohio. "Today, AMD is a painful indicator of the economic abandonment, environmental neglect, and widespread poverty throughout the region, the emblematic orange a silent signature of dying communities," contends Comp.[17] Initially, the program Comp envisioned included three project sites, where teams of two or three people came up with initial schemes for approaching the contamination through a multi-layered lens of art and science. However, due to a variety of funding and logistical factors, only one site, the mine water discharge and bony field in Vintondale, moved forward.

After the coal operators left Vintondale, thousands of tons of bony piles (coal waste) were left scattered in a field around old coke ovens and rusty tipples. When the AMD&ART project team arrived in Vintondale in 1994, the community had a per capita income that was half the state average. Thus, the conceptual plan that Comp envisioned was to understand acid mine drainage not simply as an environmental problem to be cleaned up, but as a problem with cultural origins, and thus, in need of cultural solutions. He describes the approach as follows:

> When one works for a very long time in environmental issues, particularly in reclamation, one begins to realize that environmental problems are created and defined not by science, but by our culture...We inherit the sum total of all the previous cultural decisions made about this landscape, and we address those we choose to address...I suggest that the vast array of environmental-reclamation science and technology is not sufficient, that the degraded environments we address are cultural artifacts as much as they are problems for science, and that we must address these problems with the full range of the arts and humanities, as well as the

17 Comp 2008. 64

sciences, if we are to be effective.[18]

The goal of the project was thus to create a passive water treatment system that went beyond just treating the water quality, but rather utilized a spectrum of inputs from within and beyond the science community. The disciplinary backgrounds of the core team at Vintondale reflected this approach. It included Comp, an industrial historian, sculptor Suzanne Lacy, landscape architect Julie Bargmann and geohydrologist Bob Deason, along with a rolling crew of AmeriCorps volunteers to keep up the day-to-day on-site operations,

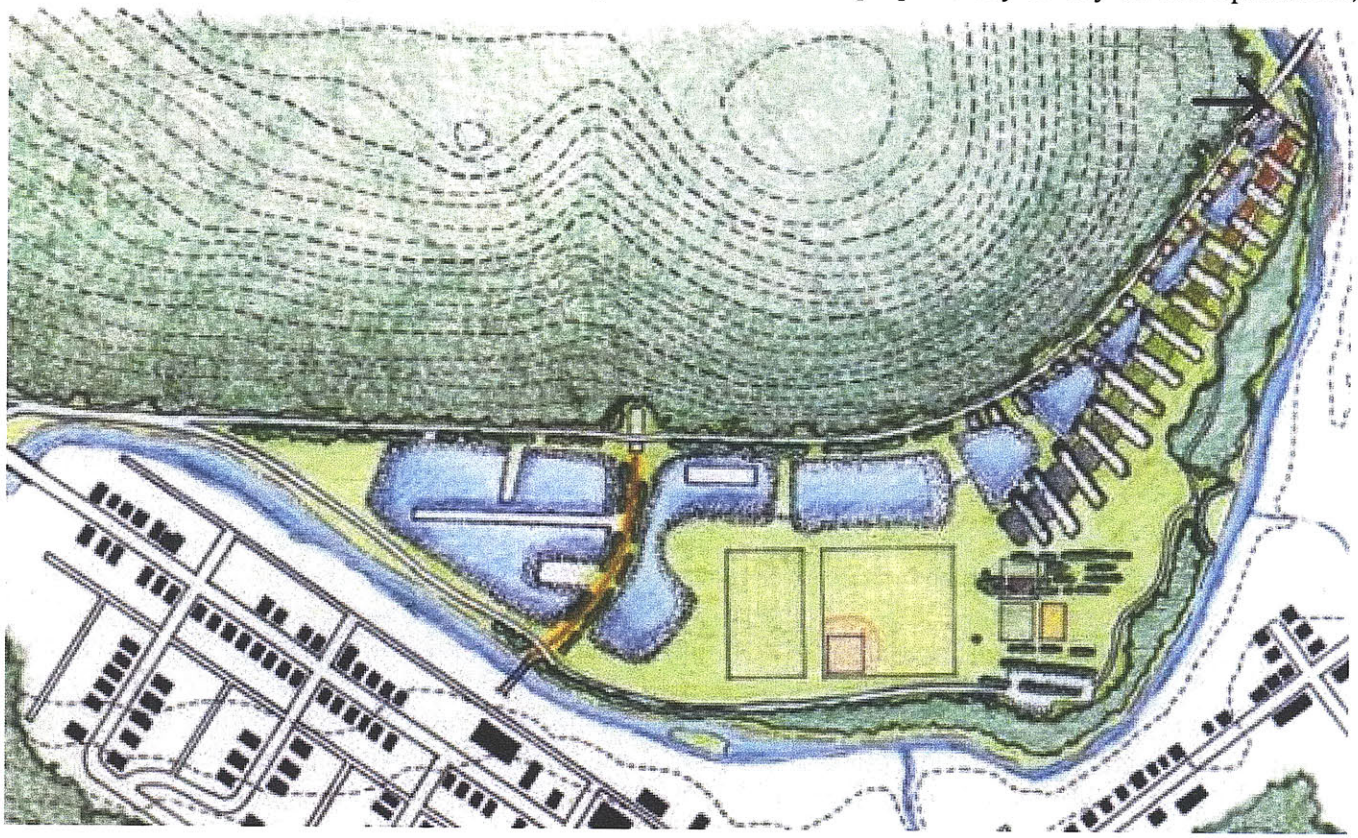


FIGURE 31: Schematic drawing of AMD&ART's Art Park in Vintondale
© www.amdandart.org

18 *Ibid, 63*

and a collection of others.

The team set about designing the project. As an experiment in giving equal weight to each design team member's voice, Comp set a ground rule: "No one is allowed to compromise, but all have to accommodate."[19] As such, when Deason presented the initial treatment system design, someone at the table said, "Do they have to be rectangles?" Deason explained the system requirements, emphasizing the slow flow time. From this discussion, the trapezoidal form that the treatment ponds took in the final design emerged. Comp, who was also managing the project budget, suggested that perhaps the ponds upland could be shallower and the ones closer to the stream deeper to facilitate the flow and save costs on soil excavation. Lacy and Bargmann collaborated on the "Litmus Garden," a planting scheme adjacent to the treatment ponds where the color of the plant varieties mimic the clarifying color of the orange-tinted water as it travels through the system. In this way, the design evolved, and the art and science did not set the agenda for each other, but rather influenced the physical outcome of all aspects of the project.

Putting the project within a scientific historic and regulatory framework helps to understand how the project evolved as it did. Deason, who brought both a technical expertise and industry experience to the team, had been working in the mining industry since the late 70's and the passage of the Surface Mining Act, which codified the requirements for mining companies to treat their waste. Experimental, industry-led innovation to deal with mine drainage proliferated in Western Pennsylvania throughout the 70s and 80s, and Deason was at the core of that discussion. A group of about 15-20 firms would gather every few months to share results, specifically on passive treatment technologies. Experimentation with treatment wetlands and limestone filtration systems lead to a technology called Vertical Flow Ponds (also called the SAPS©), in which water is filtered through a layer of

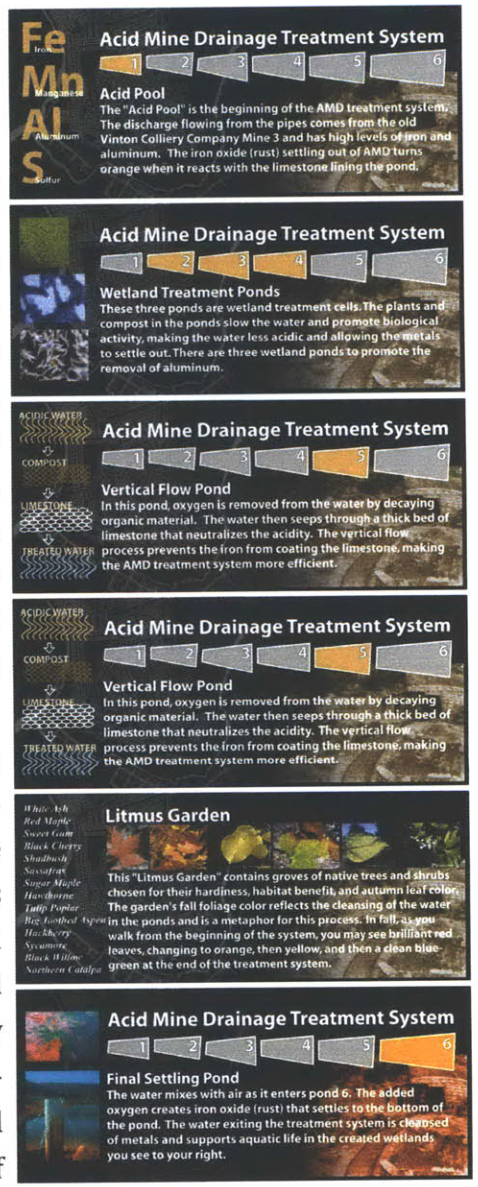


FIGURE 32: Signage at AMD&ART Park
© www.amdandart.org

19 Personal interview with Allan Comp, 1/11/11 (phone)

organic substrate including mushrooms and manure, which eliminates the dissolved oxygen before the water is filtered through limestone, creating a bicarbonate reaction. The water continues to flow through a pipe into the subsequent ponds, and then splashes down a rip rap surface to oxygenate, where the alkaline radicals are dissolved. What is left is water with a low pH level and a delta of what Deason calls "orange goo". The technology is not a cure-all, but it has increased the ability to treat large quantities of poor quality AMD, as was the case in Vintondale, where the pH level was 3.[20]

Another regulatory change that facilitated the project was Pennsylvania's Good Samaritan Act. The program incentivized community groups or other third-party actors to take on mine reclamation without incurring liability while also relaxing permitting requirements. The Vintondale team operated within this regulatory framework and, at times, pushed it further by getting agencies to be more flexible. Take, for example, a mining permit application, which was required to address the large bony piles on site. Typically, the applicant is required to backfill the bony pile pits once the material has been hauled off. Here, however, since the pits were going to be reused as wetlands and treatment ponds, the Government Financed Construction Contract supported this breach of regulation, saving the team money and unnecessary labor.

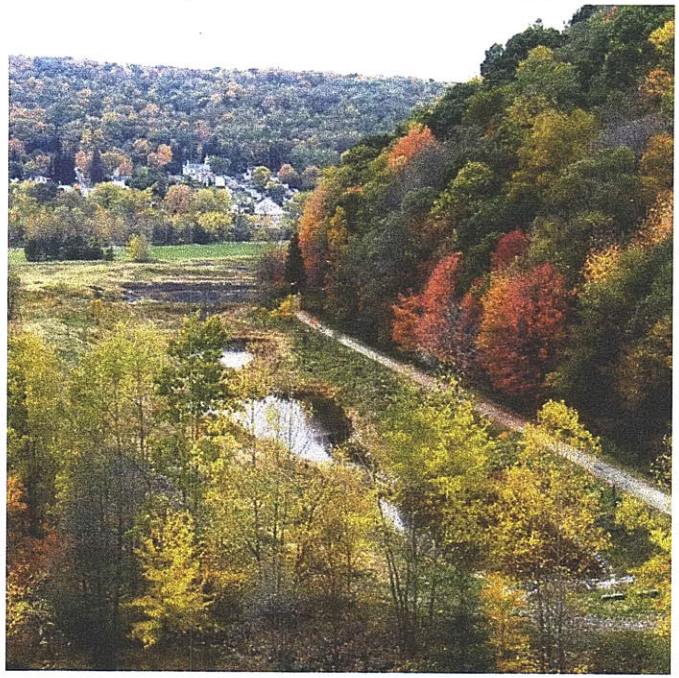


FIGURE 33: AMD&ART
Park in Fall
© www.amdandart.org

Early on in the project, engaging the community and finding adequate funding presented challenges. With respect to community engagement, Comp attributes the challenges to the legacy of disempowerment caused by a confluence of social factors: the mentality of the "company town" where,

20 *Personal interview with Bob Deason, 2/11/11 (phone)*

since historically the mining company ran everything, citizens have little experience in government; a complacency to the environmental destruction that had simply become part of the everyday landscape; and the complex relationship people have with the coal mining industry in general—at the same time seen as both a provider of stability, as well as a destroyer of nature, health and livelihood. The team found that despite good turnout at community meetings, harnessing their continued engagement was difficult due in part to political instability and the lack of ongoing commitment. In three years alone, the town had seven different mayors. And despite AMD&ART's 10-year presence in the town, several months after they left, a malfunction occurred in the treatment system and as of January 2011, no one had fixed it.

At community meetings, it became clear where the goals of the outside team and the community differed. Whereas the team talked about public art and environmental reclamation, the community talked about their desire for picnic tables and sports fields. The design team listened to these needs, however, and boasts that every single community need was incorporated into the design. In addition to responding to the community's requests, the community meetings, charettes and activities can be seen as a way to encourage a shift in entrenched attitudes about change and the future. This idea of the process as a platform for constituency building and civic empowerment will be explored further in Chapter 7.

As a grassroots effort with no initial capital budget, funding was also a major factor in the project, often dictating the pace of work. This is perhaps where Comp's contribution to the project is most apparent. He is a skillful project manager who finds creative ways to align governmental and foundation interests with the project funding needs. As a rule, at the beginning of the project, Comp decided that they were going to build a constituency base before going after the same two or three funding sources that all the local watershed groups compete for. This proved harder than expected, and by year two, their initial $4000 seed money was nearly spent. Just when they were at the brink of putting the operation on hold, a successful grant proposal for a new EPA-funded sustainable development grant for $250,000 was approved. It was the single largest grant the project received, representing slightly more than half of the entire regional allocation for the grant. There were approximately 50 other grant sources as well.

West Palm Beach Waterfront

If the *New Haven Long Wharf Master Plan* (Chapter 5) represents the beginning of artist Michael Singer's career in city planning and design work, the West Palm Beach Waterfront project should be acknowledged as the climax of this trajectory. Since his early urban-scale work, Singer has become renowned for approaching infrastructure design as a means of "promoting environmental justice, generating ecological renewal, inspiring civic responsibility and enhancing quality of life without sacrificing economic viability."[21] In this instance, Singer Studios was not hired as a public artist, but to be the project lead for a half-mile, $31 million urban waterfront plan. In an interview with art critic John Grande, Singer grapples with his own role as an environmental artist/designer.

> JG: So there was some kind of switch from environmental artist to environmental designer in this whole process that took place.
>
> MS: Not a switch but an inclusion, an addition. After twenty years of work in natural environments, and questioning my role in a natural environment and what humans do there, I began to wonder how I could use that knowledge to address community issues, look at problems in communities from an artist's point of view. And I began to develop a sense that the creative process of artists is very special, and different from any of the other professionals. It's not that we will have the solutions (sometimes we will) but we have observations, questions, and ideas, and we should be invited to the table to talk about the problems and help with the problem solving. [22]

Finding his niche as an artist among a myriad of professional designers, technicians and policymakers satisfies Singer in a way that traditional artist's work—gallery shows, museum exhibitions, etc.—did not.

Although Singer was the official lead on the project—and therefore ultimately responsible for all of the project deliverables—the project delivery structure was quite different from the standard lead/sub-consultant configuration seen in most large-scale urban design projects. "I see myself as the conductor,"

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21 *Singer, Cruz, and Bregman 2007, 7*
22 *Grande 2004, 77*

Singer explained. "I'm filtering all the information that is coming through and raising questions about it... It's leadership but it's not top down. To me, raising questions is more important than finding a solution."[23] Singer also points out that, interestingly, his lack of professionalism was helpful in communicating with collaborators and stakeholders. As a non-professional planner or designer, his toolkit for carrying out the project was diverse and the protocol for the "right" way to do things less rigid. This disregard for the standard operating procedures created a platform for creativity and innovation. As described below, it was also instrumental for ensuring that the more unconventional aspects of the design were maintained. Furthermore, West Palm Beach's mayor and the city-appointed project manager provided the necessary city support for the design proposal that the design team put forward and were instrumental in facilitating a multi-year public review process.

The environmentally sensitive West Palm Beach Waterfront design, completed in February 2010,

FIGURE 34: Rendering of South Cove, West Palm Beach Waterfront scheme
© Michael Singer Studio
www.wpbwaterfrontproject.com

23 *Personal interview with Michael Singer. 1/26/11. phone.*

is a half-mile waterfront that integrates urbanistic features with the natural. The highlight of the design is the Living Docks, which extend the city grid out onto the water and include in-water planters cut out of the center of the dock that house mangroves, spartina and oyster reef. These visible, ecologically restorative elements allow for educational opportunities and infrastructural exposure within an active public boat dock. By relocating Flagler Drive, the main waterfront road, several hundred feet further away from the water's edge, a wide public waterfront esplanade and Commons were created. The Commons includes a large event space area, two LEED-certified community buildings, a series of sculptural water elements, intimate seating areas amongst native plantings, and a new seawall.

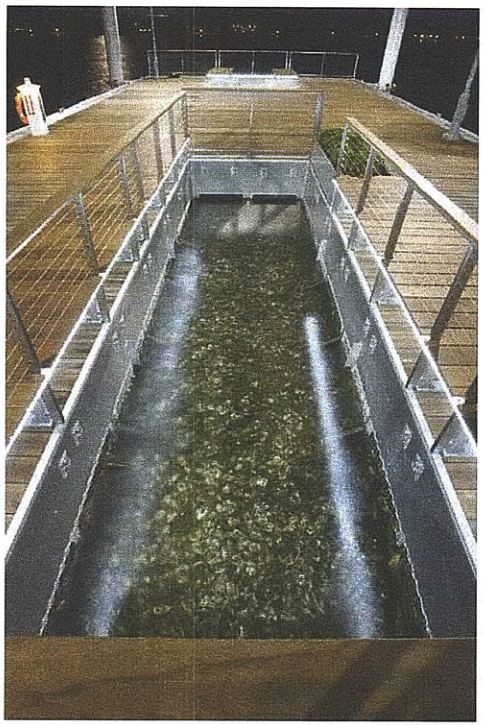

FIGURE 35: Living Docks with oyster reef
© www.wpbwaterfrontproject.com

Currently in construction is the South Cove area for ecological estuarine regeneration. Although this area was part of the conceptual design scheme created by Singer Studios, the city ultimately decided that it could not take it on, as anything beyond the seawall was outside of their jurisdiction. Singer felt strongly that this key ecological component, which addressed the anoxic conditions of the Cove caused by decades of fill and dredging as well as continued sediment disturbance caused by motorboats, was a critical component to the overall vision. In an atypical but ultimately politically savvy move, Singer approached the Palm Beach County Department of Environmental Resources Management (DERM) asking them to describe their ideal waterfront environment. "The engineers and other team leaders went nuts. You have to understand, they told me, you don't just go talk to those people. We send them our drawings at the end to get the permit," explained Singer. "But I thought, 'No, you go to them upfront and ask them what they would most like to see happen'. That was like heresy to the profession!" The DERM staff laid out an approach involving transitional intertidal edges, similar to the plan

Singer had been developing in conjunction with the City's progressive Department of Public Works. He asked if a DERM representative could be sent to the next City Council meeting where the design would be presented.

At the presentation, the DERM representative was stunned—Where was the plan for the South Cove area and the transitional edge that they had discussed earlier? When it was revealed that it had been removed from the project scope, he brought the matter to the attention of the County Commissioners, an influential body that agreed to step up and provide financial support for the South Cove project, including ongoing maintenance. It was a big win for the mayor, as she was now able to complete the full project without all the funding coming out of the city's budget. The design for the South Cove will reclaim the dredged areas by capping the deep muck holes, providing the substrate for an oyster reef, and building a 546-foot elevated boardwalk to allow for public access to the human–built mangrove islands. Currently, the project is listed as a high-priority project in the Lake Worth Lagoon Management Plan "South Cove Natural Area."[24]

24 *Palm Beach County website, www.pbcgov.com/erm/lakes/estuarine/south-cove.htm*

TABLE 5: Chapter 6 Summary: Integrated Models

	AMD&ART	West Palm Beach Waterfront
Commonalities	Pluralistic model where collaborative approach between engineers, artists, planning and community residents occurs.	
Positive Outcomes	1. Worked with marginalized community to concurrently address environmental problem (Acid Mine Drainage) and social dimensions, such as lack of civic engagement and disinvestment 2. Innovative funding mechanisms, which were documented to provide other groups with a model. 3. Constructed a treatment system, paths, fields and signage in otherwise disinvested town 4. Received many awards. Listed by EPA as model project	1. Artist as lead of design team for large-scale capital project, providing the platform for creative collaboration. 2. Waterfront opened in 2010 with "green infrastructure" elements.
Challenges	1. Perpetual funding shortages for first several years 2. No long term "caretaker" of the project. Currently not functioning. 3. Disintegration of the team over time due to disagreements over authorship issues	Faced jurisdictional issues in implementation for Cove.
Lessons	Perseverance and innovative funding, allowed project to work out. However, changed funding climate means some grants no longer available.	Importance of supportive mayor and project manager. Artist as lead removed some of the rigidity of professional planning/design practice
Issues to consider	Authorship. Outsider/local paradox. Accountability.	Artist as lead on design team. How is it different?

These final two case studies offer two different models of pluralistic planning that embrace a collaborative approach between engineers, artists, designers and community residents. Whereas the positive outcomes for AMD&ART come from the group's ability to work with an underserved community and create physical and social change, the success in West Palm Beach Waterfront comes through the use of innovative ecological design strategies and successful professional negotiation of a complex regulatory/bureaucratic system. Again, the difference in the challenges faced by two projects is stark: AMD&ART struggled with

funding and accountability; this was never really an issue for the West Palm Beach project. AMD&ART reveals the necessity of perseverance and innovative funding. West Palm Beach Waterfront raises, once again, the importance of a public sector partner, as well as bringing up the notion of the artist as a unique type of professional.

CHAPTER VII

Synthesizing theory and case studies

If nothing else, these cases offer interesting possibilities for alternative models to address the legacy of industry assaults on both physical and social environments. They remind us that art and design, when executed well, can animate otherwise utilitarian systems, objects, and processes, and that such efforts should be promoted as best practices in urban planning and design. As a group, however, the messages these projects offer for artists, designers, and planners are neither obvious nor consistent. Where some projects excel, others seem to flounder. Some collaborations are truly greater than the sum of their parts, whereas for others, the collaboration simply does not "click." A few designs are built-out as envisioned, whereas most are chipped away through the regulatory and public process, some to a point where the original vision is barely recognizable.

In general, there is an inverse correlation between what one might call the visibility of the "artists hand" and the scale of the remediation effort. As the scale and scope the remediation project becomes increasingly complex, the artists' role diminishes to one voice among the many required for such efforts. Conversely, the artist-led remediation projects discussed in Chapter 3 demonstrate a clearer artistic imprint perhaps due to the relatively limited scope of those cleanup efforts. In addition to this somewhat anticipated finding, I suggest seven factors that must be considered if the artist-planner model is to gain more traction for future remediation efforts. While some of these factors are relevant to any complex public project, others inter-

rogate the specifics of artistic contributions. Examples from the twelve projects are offered as illustration. The factors are:

- The ability to promote a transparent, visible remediation process to the public
- The capacity to leverage and identify diverse funding sources
- The importance of securing local public sector support
- The opportunities and limitations of aesthetics
- The need to acknowledge the professional uniqueness of artists
- The need for measurable accountability, both short and long term
- The importance of recognizing the reality of "the human factor."

Ultimately, understanding the projects through these factors points to a set of suggestions and policy considerations that can help promote areas and approaches for successful interdisciplinary environmental remediation projects in the future.

The need to promote a transparent, visible remediation process to the public

A unifying theme among all the case studies discussed is that they all make a process that is typically hidden from the public eye visible and transparent, albeit in diverse ways. AMD&ART's Allan Comp explains, "the degraded environments we address are cultural artifacts as much as they are problems for science, and that we must address these problems with the full range of the arts and humanities, as well as the sciences, if we are to be effective."[1] As the built and natural environment changes—which is inevitable—exposing the political and ecological history of a place even if (or perhaps more importantly if) it is highly contaminated is one way to prevent a "dangerous depolitization" of a historically and socially-wrought context. T.J. Demos warns that many efforts, including some worthwhile environmental projects descend into a puritanical return-to-nature approach that is counterproductive[2]. Critical art frequently offers the potential of avoiding this trap. Rather than becoming neutral landscapes engulfed within a redevelopment scheme,

1 Comp 2008, 63
2 Demos 2009, 20

art can transform indiscriminate places into markers of the evolving relationship between humans and the environment. In the best instances, such interventions are not merely monuments to environmental recovery or industries of the past, but create a dialectic between the complex layers of the power structures, social climate and natural world—the political ecology of a place—that can prevent neutralization while still facilitating revitalization.

Likewise, as Lynch observed, slow, long-term changes in the environment that are beyond our perceptual reach can and should be articulated through artificial means[3]. Many of the case studies do just this. *Wheatfield*, for example, drew attention to centuries of Manhattan's changing coastline in the midst of a major urban transformation during the landfill formation and construction of Battery Park City. The shock of seeing an agricultural setting amidst skyscrapers was a jolting, uncanny experience that forced attention to the changing urban landscape. In a more modest way, the plant palette for the "Litmus Garden" at AMD&ART accentuates the water purification process by transferring it to an unexpected dimension of the adjacent vegetation, bringing landscape and engineering into dialogue. In yet a different way, Fundred takes a hidden environmental problem—the developmental and social health impacts of lead contamination on urban youth—and makes us aware of its victims and causes through widespread collective art making. Such an "unhiding" of invisible environmental issues raises awareness and education about them in ways that are outside of the traditional realm of, say, the public service announcement.

Projects like *Nine Mile Run* and *New Haven Long Wharf* reveal to a broader audience the mechanisms by which an environmental remediation process occurs while letting people know that they can be part of that process. The artists from the Studio for Creative Inquiry at Carnegie Mellon effectively redirected a misguided urban planning scheme, and then created a space where a much broader public could partake in a prolonged public conversation about the future of the slag hills and creek. Michael Singer similarly brought an overlooked part of New Haven—an area cut off by the highway—to the community, inviting them to have a voice in its future.

When asked what exactly the artists' contribution is to such efforts, Jackie Brookner asserts it is their

3 *Lynch 1972*

"synthetic imagination." By synthetic, she explained, she meant as in "to synthesize". "Artists excel at pulling together and integrating different points of view. I see them as educated generalists who can translate language for the public."[4] This adeptness at identifying problems that are technical and scientific in nature and presenting them in a different language (visual or otherwise) create important bridges between difficult to understand processes and the public at large. Artistic intervention in a remediation context thus reveals itself not as decorative but as potentially transformative to both the space and the process. Art, which throughout history has over and over abolished its own boundaries, excels at encroaching on new territories, and absorbing, filtering, and critiquing disparate disciplines.

The capacity to leverage and identify diverse funding sources

Funding is a determining factor in how these projects get carried out, or in fact, whether they get carried out at all. Art world support for large-scale projects out of the museum space has historically been limited. It is why so few land artworks have been constructed, as they are costly and inaccessible to their main audiences. A handful of sculpture parks provide venues for "display" of earth art, such as Storm King Sculpture in upstate New York, and the DIA Foundation, which oversees the upkeep of earthworks from the 70's. But by and large, the scale of grants from arts funders are insufficient for the cost and scope of the projects discussed here. For this reason, few actually get constructed, and consequently, many artists shy away from attempting to produce them.

In the absence of a private developer or a government-funded initiative, creative fundraising can open up doors that may traditionally seem out of bounds for art funding. Furthermore, the infrastructure of the art world can lend support to projects through symbolic power. Such is the case with several of the case studies presented here. In a simple yet ingenious way, the Harrisons created their own policy incentive system as part of the production of the Spoils Pile Reclamation Park. The tax break for an art donation that truck drivers received when they dumped organic material onto the landfill site integrated the production of the artwork into the project. In this way, the truck drivers become complicit participants and funders in the transformation of a contaminated place without even realizing it.

4 *Personal interview with Jackie Brookner, 1/29/11*

A more complex effort was facilitated by AMD&ART for the Vintondale project. Allan Comp sees his own role in the project as an "aligner of interests," both through political alliances and funding opportunities. He raised nearly a million dollars by cobbling together 25 grants, ranging from the largest—a $250,000 Sustainable Community Grant from the EPA—to the midsize—such as the Heinz Foundation Arts Grant ($50,000) and Pennsylvania Department of Environmental Protection's Growing Green Grant ($40,000)—to the small, such as CTC Foundation Signage Grant ($5,800) and the WREN Training Scholarship ($245). These fundraising efforts created a network of financial supporters that also became an extended group of stakeholders invested in the project while helping to raise the project's profile.

TABLE 6: Funding mechanisms

Funding Mechanisms	Project Names
Federal arts funding (NEA)	*North Waterfront Park*
Municipally funded public art commission	*New Haven Long Wharf, Byxbee Park*
State/Local Arts Funding	*Twin Stupas, Nine Mile Run, AMD&ART*
Corporate/Private foundations	*Wheatfield, Nine Mile Run, Fundred, AMD&ART*
Event-based funding (biennial, exhibition, etc.)	*Veden Taika, Spoils Pile Reclamation Site*
Non-traditional arts funding (EPA, state environmental agencies)	*Twin Stupas, Wingfield Pines, Nine Mile Run, Fundred, AMD&ART*
Municipal capital budget	*West Palm Beach Waterfront, Byxbee Park, North Waterfront Park*

Another mechanism for funding is the "pilot project." At least four of the projects discussed here self-identify as pilots. Again, AMD&ART is the most comprehensive example. As a not-for-profit organization, the Vintondale project was AMD&ART's pilot for testing out a different model for treating AMD using a watershed planning model. The EPA's Watershed Academy program highlights the project as a model for community-based watershed approach that builds constituencies across disciplinary and physical boundaries, and includes a downloadable webcast from 2007.[5] Other federal and state governmental agencies tout the project as a worthwhile model for replication, such as an EPA publication *Development for the Future: Hometown USA- Innovative Community Projects Supported by EPA Grants.* In fact, a small EPA grant was

5 *Comp 2007 webcast.*

specifically awarded to the group to annotate the website with details on each and every grant received. In this way, the project sought to address not only the immediate community in Vintondale, but also provide the broader community of Appalachian mining towns with a model that would be relevant and replicable. In my opinion, however, it remains unclear whether this massive list of grants motivates or scares away similar grassroots groups from undertaking a similar effort.

As non-traditional means of carrying out remediation, other projects also used "pilot" language as a way to secure funding. For example, *Operation Paydirt* shared their research with the EPA and established a pilot program in Oakland to test the remediation technology they were developing in an urban neighborhood, thus moving the science aspects of their project forward by creative partnering. *Twin Stupas* was intended to be a pilot project for mine reclamation by the Pennsylvania Department of Environmental Protection, but unfortunately the chief staff person passed away before the project was completed and was not picked up by anyone else in the department. *Veden Taika* received a grant specifically to test the water quality system of the floating islands. "Pilots" create pathways for implementation of new ideas in a way that is far less threatening or disruptive to the existing system. Unfortunately, the lack of continuation of these projects seems to indicate that pilots are better at convincing skeptics and providing seed funding rather than actually leading to the replication or scaling of the projects.

Of course, the intermixing of art with project funding raises the issue of the artist becoming implicated in dominant systems that the works are intending to critique and address. Governmental policies continue to promote an exploitation-production-consumption system of resource extraction, even with additional regulatory checks in place. Sponsorship from those same organizations, such as the Office for Surface Mining, which continues to allow for destructive mining practices, does raise questions about the ability of the project to more broadly address structural issues in government and the economy at large. Interestingly, there is a parallel argument of institutional critique coming from within the art world that criticizes its own funding, which often comes from corporate or governmental sponsors.

The importance of securing local public sector support

A partner in local government who advocates for the project behind the scenes seems to have been critical to the success of several of the twelve projects. Because of the scope of most of these initiatives, the reality is that local government will play some role, as either a partner or as a regulator. No matter how wonderful an idea is, it often seems to require an "enlightened bureaucrat" or elected official who believes in the project to do the extra lifting that pushes it through the system. They tend to be under-celebrated figures. Joan Blaustein, the Special Projects Director in Pittsburgh City Planning Department in the case of Nine Mile Run, the mayor in the case of West Palm Beach Waterfront, and Leon Kaplan, director of Cultural Affairs in Palo Alto in the case of Byxbee Park, all wrestled with in-house non-believers, defended the project to the public and put in the extra work required to bring non-conforming projects to fruition.

FIGURE 36: Wind Wave at Byxbee Park. Photo by Jessica Fain

Conversely, the absence of such individuals reveals a set of challenges. In the case of *North Waterfront Park Master Plan* in Berkeley, a plan that ostensibly had community and public support failed to launch because of the lack of such public sector staff members who were willing to take the project on. Elected officials paid lip service to the project rather than getting behind it. The history of the city's violations with the Air Quality Control Board meant there would be an upward battle against skeptical regulators.

In the case of AMD&ART, while there was local participation (at visioning charettes, for example), there was a lack of local leadership, and thus ownership of the project. When I visited the site in winter 2011, the treatment system was not working due to a malfunction with the main discharge pipe. AMD&ART left the maintenance responsibilities in the hands of a local watershed association, including funding, but that

transfer seems to have been poorly implemented. Furthermore, on my way out of town, I notices a bubbling area of the river where the non-functioning system discharges. Curious, I asked Bob Deason, the geohydrologist, about it and immediately, I sensed frustration in his voice. It turns out water from a nearby abandoned mine was causing problems in neighborhood basements, and the Pennsylvania DEP had decided to lower the mine pool by drilling holes to allow water to discharge—the same highly acidic water that the AMD&ART system treats—directly into the stream bed. "In this case, the DEP *created* the problem," he exclaimed, exasperated.[6]

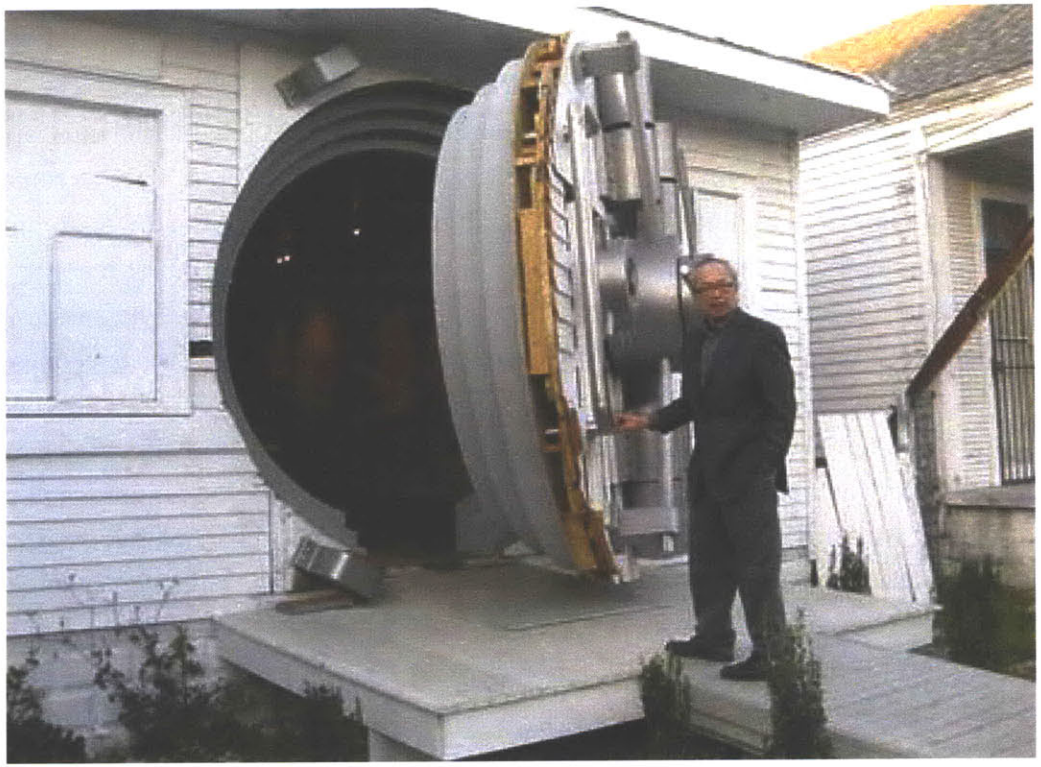

FIGURE 37: Artist Mel Chin opening the door to the SafeHouse, New Orleans © www.fundred.org

6 *Personal interview with Bob Deason. 2/11/11 (phone)*

The opportunities and limitations of aesthetics

Artists are often brought onto a project to bring an aesthetic perspective or contribution. *Wingfield Pines* and *Byxbee Park* are the two most straightforward examples of this type of relationship. In the former, the artist was hired to improve the public experience of the AMD treatment system. The physical manifestations of this collaboration are seen in several elements of the design, such as the fountain-like discharge pipe, seating areas for contemplation and the re-usage of removed tree trunks as bird perches. Similarly, *Byxbee Park* has clearly recognizable interventions that read as "art." These large-scale public artworks are in dialogue with the landscape design, but are clearly the mark of an artist's hand.

Even more so, the artist-led cases discussed in Chapter 3, where the artist defined the project scope, most clearly demonstrate a strong physical, artistic gesture that is legible at a landscape scale. While most of these aesthetics belong to a vocabulary more closely aligned with landscape design than traditional sculpture or monuments, they nonetheless functionally denote a place as remarkable. *Twin Stupas*' unnatural sculptural mounds and *Wheatfield*'s juxtaposition with the lower Manhattan skyline are visually arresting, creating uncanny moments in an otherwise banal environment.

With much art funding, such as Percent for Art commissions, an underlying assumption is that the artist will create something that physically relates to an architectural space. Michael Singer's *New Haven Long Wharf Master Plan* project fundamentally disrupts this tradition. While drawings and designs were produced, they were not predetermined at the time of the competition, nor were they adopted in practice. Rather, the public art commissioners suggest a willingness on behalf of the funders to allow for a form of public art that does not put aesthetics at the center, but as secondary to an overall conceptual vision. *Nine Mile Run* and *Fundred/Operation Paydirt* take this idea even further. *Nine Mile Run,* while not a Percent for Art commission, was intimately tied to a neighborhood development plan by the city planning department. However, there was no promise of a physical articulation, and there is no trace of anything identifiable as art on the site today. Despite this, their involvement was fundamental to making a process move forward. Similarly, while AMD&ART's Vintondale project does contain artistic elements, such as a large etching covering the entrance to the mine, they fall more squarely into the realm of traditional public art

and lack the arresting, visual impact of the projects discussed above. The significance of this project lies more in its innovative methodology for grassroots, interdisciplinary environmental remediation.

While not yet completed, *Fundred/Operation Paydirt* offers a model that may operate more successfully both functionally and physically. The nearly completed remediation pilot project in Oakland offers a promising solution for addressing lead contamination at its source and thereby could scale up to be national in outreach. The Fundred portion has created a strong visual imprint, in a specific location (the SafeHouse in New Orleans), as a dispersed/centralized imprint throughout the U.S. (in classrooms), and also collated in a single location (the Fundred website). In this way, the project has managed to garner interest in both the scientific world, through a genuine research agenda, and the art world, which Mel Chin considers his community.

The need to acknowledge the professional uniqueness of artists

Several of the case studies illustrate a change in the design and development process when an artist was on the team of collaborators. Michael Singer reflects on the chemistry of teams where he, as an artist, works with professionals in other fields.

> The people who I've met are extraordinary in their professions... but working together with us [Michael Singer Studio], these people open up in ways that they do not in their other professional endeavors. Usually, they are given a scope of work, and that's what they'll do. Working with us, they'll work at reduced rates. We have fun. We take a broader perspective than the formulaic. We're interested in understanding why the formula works, its limitations and what it's not addressing. That's when you ask the questions. With my own work, it's all about questions.[7]

The creative energy for the project comes from the open, inquisitive approach that Singer takes as the "conductor" of the project.

Similarly, in the case of *Wingfield Pines*, Kraynyk contends that Ciotti's presence on the team allowed the ideas for the design to be freer and less constrained by the engineering aspects. In a sim-

7 *Personal interview with Michael Singer, 1/26/11 (phone)*

ilar way to Singer, this allowed for less hesitation to propose unconventional ideas to the team. However, mainstream skepticism about engaging artists, particularly in the U.S., remains. Even among designers who have had many positive experiences working with artists on landscape projects, there is caution. Landscape architecture professor Niall Kirkwood attributes this to a difference in psyches related to the way in which artists and designers work. "A designer or planner does what the program dictates," explains Kirkwood. "And an artist does what he or she is ready for."[8] When those interests align, Kirkwood contends that it can be a wonderful collaboration. When it doesn't, however, it can be a disaster.

Artist Jackie Brookner articulates a similar sentiment, although she sees the disparity as a difference in frame of reference. For many artists, the philosophical and conceptual aspects remain central throughout the process. "Artists might ask, how are we going to evolve as a species? What is the "being of human"? What do we need to understand differently? These types of questions are filled with political and economic dimensions. But some city planning person isn't thinking about this...we need some people looking at bigger picture. We need the thoughtful, prophetic voice."[9]

However, is it essential that an artist is present to fulfill this role? Not necessarily. The artist as a unique, "creative genius" is a stereotype that, when assumed in real project management, can lead to misunderstandings and unmet expectations from all sides. Planners or designers who hire an artist to bring "enlightenment" to a project may be disappointed when the artist fails to fulfill that role. North Waterfront Park illustrates this point particularly well: despite the community's high expectations from bringing an internationally renowned artist on board, it was not the right match for the specifics of that project team and community. Likewise, a self-identified "artist" need not be the only individual who can fulfill such a role. Other design professionals utilize artist-like processes to create their work. Allocating this role to a self-identified artist limits the pool of talented individuals who might be better suited to the role. For example, an artist whose work is primarily studio-based may not be as well prepared for undertaking large scale, outdoor projects with public considerations as, say, a landscape architect or engineer with that experience.

8 *Personal interview with Niall Kirkwood, 1/27/11*
9 *Personal interview with Jackie Brooknert, 1/29/11*

The need for measurable accountability, both short and long term

As soon as artists step into the realm where their work is expected to be functional, a new set of ethical and process related questions emerge. To work in this realm, the artist must take responsibility for the physical and social implications of his/her actions. As such, many artists choose not to engage themselves in this process at all, preferring the flexibility and openness of the traditional creative world they find more suitable. For those who do attempt to undertake work that engages a social or physical problem, there is the danger of creating something that may on the surface purport to be ameliorative, but in practice is not. Too often, such projects end up with artists using the problem more as a platform for furthering their own artistic ideas rather than addressing an issue in a meaningful way. Much of the dialogue around socially-engaged art practice in the last 10 years has explored this tension, especially in the context of international biennials and other temporary art events where the necessary support to create a prolonged, engaged project is impossible.[10]

With respect to the twelve projects explored in this thesis, their relationship to accountability varies. *Wheatfield*, which was envisioned as a temporary project, did not purport to take responsibility for anything beyond the event itself, and the project pointedly ended with the harvest, when construction resumed at Battery Park City. At the other end of the spectrum, when the artist-led portion of *Nine Mile Run* project was complete, they established a watershed association to continue the work started by the artists. Projects that were "born" within an institutional setting, such as *Byxbee Park, Wingfield Pines* and *West Palm Beach Waterfront*, do not face the same issues of artist accountability, since the organizations with whom they have partnered typically assume that responsibility from the beginning. Unfortunately, where such support does not exist, "ownership" issues can emerge. For example, AMD&ART attempted to ensure long-term maintenance through partnership with the Blacklick Creek Watershed Association, a pre-existing environmental organization. Despite the establishment of a maintenance fund, to date, the watershed association has failed to keep up its end of the deal.

Long-term accountability, however, can be measured in other terms than just the functionality of the system. Research by Sue Thering, from the University of Wisconsin, Madison, aimed to under-

10 *Tania Bruguera's current year-long project on immigration in Queens, NY, Immigrant Movement International, is an example of a project funded by contemporary arts groups that aims to overcome time and place obstacles.*

stand the effectiveness of AMD&ARTs outreach programs, such as the number of cleanup days in the river, participatory design charettes, and grant writing workshops, as a measure of "enhancing organizational capacity within the community so residents might more effectively engage outside resources." Drawing on experiential education and action research theory, she conducted a survey with residents in 1998 and again in 2001 to assess whether the community can be defined by their capacity to imagine a better future. The results suggest that during those three years, the change in the number of residents who thought positive change was possible was statistically significant in three categories: (1) increased community cooperation as part of planning cleanup and redevelopment, (2) more visitors spending money in the area, and (3) resident participation in AMD cleanup and land redevelopment decisions.[11] As such, she concludes that a trans-disciplinary approach employed by AMD& ART can create the conditions by which an at-risk community can imagine a better future and take actions to overcome barriers.[12] These more difficult to measure changes in public psyche and sense of civic empowerment are nonetheless meaningful. Attempts, such as Thering's, to quantify them may be met with skepticism but they can help prove to funders that interdisciplinary efforts have added benefits.

From a purely cultural production standpoint, the performative aspect of the project can be said to have cultural value on its own right. This argument is difficult to uphold, however, when the stakeholders are not just a cultural audience, but communities that are expecting real change in their backyards.

The importance of recognizing the reality of "the human factor"

Lastly, there is the ambiguous, but ever present, issue of the "human factor." Sometimes collaborations simply just don't work out. People have different working styles and approaches, personalities clash, visions contradict. Interviews with participants of at least three of the projects discussed in this paper mentioned less than ideal working relationships among members of the team. Does that mean the projects are failures? Not necessarily, especially if the members are able to put aside their differences for the sake of the

11 *In response to the question: "On a scale of 1 to 5, with 1 being VERY UNIMPORTANT and 5 being VERY IMPORTANT, please rate the following possible benefits of cleaning up Acid Mine Drainage and redeveloping contaminated land," nine answers were provided.*

12 *Thering 2007*

project. It does, however, reveal important lessons for those wanting to replicate any of these projects, such as the importance of an adept facilitator who can establish a sense of open mindedness and trust among team members.

Interestingly, the instances where relationships have been tested tend to occur between artists, rather than between artists and other collaborators. Without going into specifics, more than one artist (either a self-identified artist or another team member who employs an "artistic approach" to his/her process) was present on those teams. While looking only at the case studies is too simplistic and clearly represents too small of a sample size to make a broad conclusion about the difficulties of artistic collaboration, it hints that when there are multiple individuals vying for the artistic space, the potential for discord might be higher.

A look ahead: Where does policy change have to occur?

The general conclusion from this diverse range of twelve projects points to a realm of artistic-environmental activity that, when it works well, is a model for how we can approach contaminated landscapes from a creative and interdisciplinary perspective. It suggests a possible paradigm for new creative collaborative opportunities in the future. While none of the projects cited are flawless, many have been judged successful. Even their shortcomings offer places where better policy can potentially help produce better outcomes. Yet the artist-planner model has not been enthusiastically embraced within the mainstream arts or environmental science communities. As a result, it has yet to capture the attention of policy makers, communities or artists who are looking for innovative ways to improve a degraded environmental condition. Since most cleanup projects seem to fall somewhere within the broad spectrum of both environmental and cultural policy, but yet do not fit nicely within either, it is important that future policymakers in both the governmental and private sectors consider new ways for artist-driven remediation to be encouraged in the future. I suggest three policy scenarios at different institutional levels that might be undertaken to encourage more activity in this arena as well as better outcomes.

Guidance from the top (a nod to Europe)

Given the lack of cohesive arts and cultural policy in the United States, few strong voices exist at the federal level that might advocate for an integration of the arts with the ecological or scientific programs. In contrast to most Western European countries, which tend to allocate substantially more national funding to cultural programs and institutions, government plays only a supportive role in the delivery and financing of arts and culture in the U.S.[13] Furthermore, unlike countries such as Sweden, which have a clearly articulated social democratic agenda behind their arts policy, the U.S. cultural policy operates in an ad hoc manner at best. For example, California-based artists Helen and Newton Harrison, whose work over the past 30 years has taken on environmental conditions at the ecosystem scale, have almost exclusively worked in Europe since the 80's, invited by various national-level commissions to contribute to conversations on climate change, conservation and ecological sustainability. "In America, you can't get to government," Harrison said in explanation of why so much of their work has been abroad.

While commitment to public funding for the arts remains a politically divisive issue in terms of its content, the utility of integrating the artistic community into leadership roles to resolve systemic environmental challenges that threaten us all remains far less controversial. One potential policy route would be to encourage a well-defined top-down approach with a clear set of policy goals coming from a national or state-level, including a clearly articulated goal for artistic integration into community development and environmental policy making. It would require a shift in government funding to allow for more joint grant making through agencies like the EPA and the NEA, as well as funding directed towards evaluation to

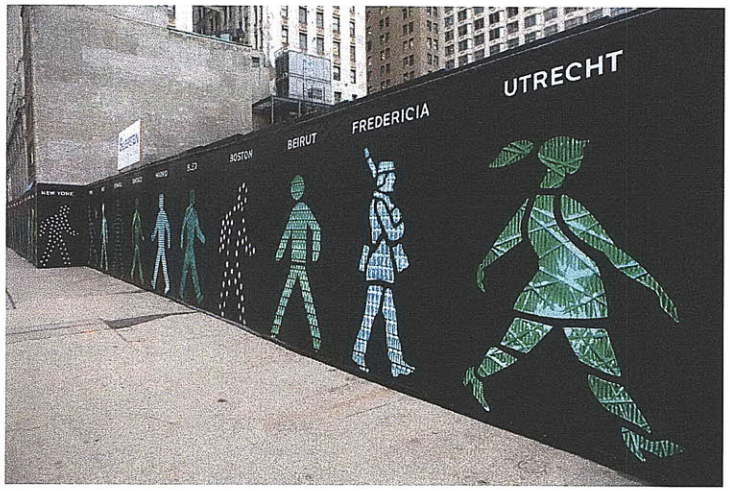

FIGURE 38: *Walking Men 99* by Maya Barkai (Re:Construction project)

13 *Toepler and Zimmer 2002*

gauge the success of funded programs.

Already, we are witnessing a trend in the federal government where the boundaries between the traditional silos of grant making are blurred, and policy that allows for opportunities for bridging disciplines and new dialogical spaces is emerging. The NEA's 2011 magazine, for example, focuses on "Arts and Communities", while EPA's "Community Action for a Renewed Environment" (CARE) is a "competitive grant program that offers an innovative way for a community to organize and take action to reduce toxic pollution in its local environment."[14] Synergies thus begin to emerge around broader social themes. As such, one way that arts and environmental grant makers could capture more projects like the ones discussed here would be to continue expanding their bottom line(s) to allow for a wider range of creative initiatives. The language of the CARE grant, for example, could explicitly mention artists or art-based initiatives as one of the "various local organizations, including non-profits, businesses, schools and governments." Likewise, NEA and state arts agencies could be more creative with their funding categories by specifically targeting environmentally and ecologically-engaged initiatives. This would invite voices with different, and hopefully critical, opinions into the process that could layer a broader cultural perspective on top of the narrow focus of the grant proposal.

Within the more specific area of public arts funding, how can existing policies, such as Percent for Art programs, allow for a more diverse range of artistic practice, including process- based efforts? Singer showed us that with an open-minded jury, the potential for flexibility is already available within existing systems. However, with Percent for Art projects tied to capital funds, public art committees need to expand their acceptance of more ephemeral, process-based art works. *Nine Mile Run* shows, however, that such non-physical projects can provide true impact on the landscape. The challenge will be to change the public's perception of what constitutes "artwork" and then create the grassroots network to ensure public support. Because of the unique conjunction of the artistic and scientific communities to solve land remediation issues, the opportunity for coordination is there—just not in the forms we are used to seeing. Accomplishing such change is a question of public arts administrators loosening the rules in their municipality or

14 U.S. Environmental Protection Agency, www.epa.gov/care

institution about what can and cannot be considered a public art project.

The American model, revisited

The irony, of course, is that when we compare the challenges to policy here in the U.S. to Europe, a "grass is always greener" situation becomes evident. Europe struggles to negotiate the increasing privatization and commercialization that has crept into the traditionally state-funded cultural realm, fearful of neoliberal governments that transform the cultural agenda into an economic one.[15] The United States does not seem nearly as preoccupied with the danger of such potential paradoxes between corporate sponsorship and critical art practice: for better or worse, it has been a dominant feature of this country's cultural realm throughout the twentieth century. Thus, a more "American style" scenario would be one led by the private sector. While the cases discussed almost all involve land owned by municipalities or non-profits, the majority of remediation occurs on privately owned land. Remediation is a hurdle, something that developers and governments want to accomplish as quickly as possible. As such, the market does not naturally incentivize anything that might allow for creative alternative pathways in the remediation process.

Introducing incentives to private developers to encourage other forms of remediation, which would be an addendum to the existing tax abatement and technical assistance programs in place, could encourage "creative remediation" on privately owned sites. Artist-led remediation projects offer fuel for thought. The *Harrison's Spoil Pile Reclamation Park* shows how existing policies can actually work in favor of creative processes if they are co-opted. There, the artists approached policy much like a designer would approach physical constraints of site: as opportunity. This is a lesson to planners and project managers who might see policies as merely regulatory. Likewise, their work, along with Angelo Ciotti's, shows how creative manipulation of soil can end up making the earthwork process less expensive for the owner.

Where would such strategies overlap with existing policies regulating remediation? One opportunity, for example, would be linking with new programs. In New York City, for example, the newly estab-

15 *Lind and Minichbauer 2005*

lished Brownfield Cleanup Program[16], the nation's first municipally funded program that provides assistance for the revitalization of contaminated vacant land, could require developing a partnership with one of the city's cultural organizations to promote an artist-in-residence for all new brownfield projects. Thus, in addition to job creation and improved public health as measurable outcomes, engagement with the cultural sector becomes another metric of the program.

Two current public art programs in Lower Manhattan bring together private land owners and artists to create temporary artworks and spaces. LMCC's Lent Space Program creates an "in the meantime" activity for a vacant site awaiting future development. Similarly, the Downtown Alliance's Re:Construction is a temporary public art program that uses Lower Manhattan's construction sites as "canvases for innovative public art and architecture." Both projects require close partnerships between non-profit arts organizations, private developers and city agencies.

Privately-funded programs such as these could be extended to accommodate artistic intervention on environmental remediation sites. I think there is an opportunity to push this effort even further, however. What if, instead of using art as eye candy while private development proceeds as usual, the art becomes part of the development process of contaminated sites? For example, what if incentives, in the form of grants or awards, were given to remediation projects to provide for educational opportunities or public engagement while remediation is underway? This might encourage developers to hire not only visual artists as collaborators, but also others with a humanist bent, for instance teachers, performers, storytellers, and environmentalists. Such an approach might also encourage the environmental remediation community to take the "public meetings" requirements more seriously than merely another box that must be checked.

This brings up the question of the best way to structure a remediation team. The case studies offer several models, ranging from artist as lead designer of a team, (as exemplified by the *West Palm Beach Waterfront*), artist as producer of a work of art (artist-led remediation examples in Chapter 3), artist as facilitators of community engagement process (*Nine Mile Run, AMD&ART, New Haven Long Wharf Master Plan*), or artist as one voice amongst a team (*Wingfield Pines, Byxbee Park*). Each of these configurations has

16 *A PlaNYC 2030 initiative, in 2007 New York created the Office of Environmental Remediation and signed the Brownfield Act into law.*

its benefits and should be considered in relation to the scope of the remediation project, the length of the engagement, the qualities and interests of the artists and other team members, and the funding resources available. Even hiring artists as consultants instead of hiring artists to create an artwork can produce drastically different outcomes. Those attempting to carry out similar efforts, whether they are project managers or the artists themselves, should give careful consideration as to how the balance of power is distributed amongst the team members.

A third space for change: educational institutions

A criticism of the previous two policy scenarios is that they both instrumentalize art as part of the public or private sector agenda. Critics, especially advocates of a more radical art or environmental approach, would point out the danger of encouraging the interdependence of these systems. From this view, only micro-system support and radical grassroots efforts produce a canvas allowing for a more genuine space for cultural expression. While such spaces are absolutely essential to promote critical cultural discourse, they are undeniably limited in scale and scope. And with respect to environmental remediation, which is costly and complex, grassroots efforts raise the question: Who will pay?

Educational institutions, while not "micro" or grassroots, can become a greater site for interdisciplinary exchange. Historical precedents, such as the Center for Advanced Visual Studies at MIT and the STUDIO for Creative Inquiry at Carnegie Mellon are leading examples of niches within large institutions that encouraged exchange and communication between art and science. However, from my own personal experience of trying to learn about environmental remediation from various points of view within such an education institution, genuine interdisciplinary dialogue is strikingly absent. After making separate visits to the departments of Civil Engineering, Landscape Architecture, Art, and Urban Planning, I was disappointed to find that the experts in each of those areas knew very little about how others were approaching the topic of remediation. Space needs to be made available for long-term, jointly-taught course offerings so as to share knowledge horizontally within the tolerant context of the university.

At the grade school level, many opportunities exist to engage communities via their children through

public art activities. *Veden Taika* is just one example of how students in a technical high school program were able to learn hard skills as well as new art-making techniques involving the study of sculptural form. Integration of ecological science and art within a curriculum also offers a platform for teaching science, an area that educational policymakers see as essential for the growing "knowledge economy."[17] The opportunity offered by green jobs training is yet another area where education and creative remediation converge. It is difficult to understate the need to develop a new generation that will be sensitive to and possess the skills to deal with the increasingly complex environmental challenges that we will confront in the future.

17 *A policy example is Massachusetts' STEM Pipeline Fund, established in the 2003 Economic Stimulus legislation, to increase the number of students, teachers and curriculum that support careers in fields related to science, technology, engineering and mathematics (STEM).*

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APPENDIX A: INTERVIEW LIST

Bob Bingham Artist, Associate Head and Professor of Art, Distinguished Fellow in the STUDIO For Creative Inquiry at Carnegie Mellon University, School of Art, Carnegie Melon University	January 19, 2011 (Pittsburgh, PA)
Joan Blaustein Former Special Projects Manager at Pittsburgh City Planning	March 11, 2011 (phone)
Jackie Brookner Artist	January 29, 2011 (New York, NY)
Angelo Ciotti Artist	January 20, 2011 (Pittsburgh, PA)
Mel Chin Artist	March 21, 2011 (phone)
T. Allan Comp Historian; U.S. Office of Surface Mining	January 26 and 28, 2011 (phone)
Robert Deason Hydrogeologist	February 11, 2011 (phone)
Agnes Denes Artist	January 29, 2011 (New York, NY)
Newton Harrison Artist	March 12, 2011 (phone)
Niall Kirkwood Professor of Landscape Architecture and Technology, Graduate School of Design, Harvard University	March 28, 2011 (Cambridge, MA)
Roy Kraynyk Executive Director, Allegheny Land Trust	January 21, 2011 (Sewickley, PA)
David E. Langseth, PhD Lecturer, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology	March 2, 2011 (Cambridge, MA)
Ralph Horgan and Bob Reppe Campus Design and Facility Development, Carnegie Mellon University	January 21, 2011 (Pittsburgh, PA)
Peter Richards Artist	Dec 21, 2010 (San Francisco, CA)
Michael Singer Artist	January 26, 2011 (phone)
Brenda Smith Executive Director, Nine Mile Run Watershed Association	January 19, 2011 (Pittsburgh, PA)

Acknowledgements

This thesis is the product of conversations with many individuals to whom I owe tremendous gratitude.

First, I would like to thank my thesis advisor, Brent Ryan, for his support, guidance and clarity along the way. Anne Spirn, my academic advisor and reader, has provided an ongoing dialogue about the topic throughout my two years at DUSP and offered thoughtful responses as a reader. Additionally, Gediminas Urbonas, also a reader, offered generous insights from an artist's perspective.

I was overwhelmed by the generosity of all of the interviewees, who shared their thoughts, experiences and opened their offices and homes to me. They include Bob Bingham, Joan Blaustein, Angelo Ciotti, Mel Chin, Allan Comp, Robert Deason, Agnes Denes, Newton Harrison, Niall Kirkwood, Roy Kraynyk, Ralph Horgan and Bob Reppe, Peter Richards, Michael Singer and Brenda Smith. A special thanks to Jackie Brookner, who introduced me to many of these concepts and has been an inspiring voice for many years.

I would also like to thank those at MIT who have encouraged me to think in new ways. Particularly, to Alan Berger, who allowed me to explore some of these topics in urban design studio, Antonio Muntadas, who has been supportive in my own public art explorations, Susan Silberberg-Robinson and the LINC team, Scott Berzofsky, who introduced me to many artist texts and has been a helpful sounding board, Jess Garz for introducing me to Mel, as well as my wonderful classmates in DUSP.

Lastly, I owe so much gratitude to my family for their love and support. Particularly, my "team of editors"— my father, Barry Fain, and my boyfriend, Kevin Erspamer—have put in far too many hours providing invaluable feedback and edits.