MICHAEL RYAN TYMOFF
Reinterpreting Industrial Landscapes: Athens' Gas and Light Manufactured Gas Plant
(Under the Direction of DARREL MORRISON)

The author examines issues associated with redesigning industrial landscapes at the intersection of urban and ecological design. Background research considers alternatives to the reclamation of the post-industrial landscape that accept the limitations of arriving at a complete understanding of the past. The practical problems of restoring ecological health through designing green infrastructure are explored through the investigation of case studies and a site-specific design application. The instrumentality of urban design is utilized as an additional layer in the reordering of derelict landscapes. The design application seeks to recover the post-industrial landscape by reconciling the primary considerations of ecological design, such as structure and function, within a context of cultural activity. The author concludes that ecological design should not only reveal natural processes and remedy ecological damage, but also enable a diverse range of cultural events to unfold.

INDEX WORDS: Industrial, Landscape, Urban Design, Ecology, Recovery,
Reclamation, Phytoremediation, Architecture, Brownfields,
Contamination, Infrastructure

REINTERPRETING THE POST-INDUSTRIAL LANDSCAPE:

ATHENS' FORMER MANUFACTURED GAS PLANT

by

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TABLE OF CONTENTS

INTRODUCTION

RETHINKING INDUSTRIAL LANDSCAPES

> *"Art may be content only to comment on unstable, unsustainable, or consumptive conditions: responsible design should remedy them. This dimension of healing, the deliberate manifestation of a normative, corrective process in the landscape, is the obvious 'end' of the revelatory process. Why diagnose if not to cure? Why reveal if not ultimately to heal?" (Thayer, 1994).*

"Brownfields", characteristic of the post-industrial landscape, are defined by the EPA as "abandoned, idled or underutilized industrial and commercial sites where expansion or redevelopment is complicated by real or perceived contamination that can add cost, time or uncertainty to a redevelopment project." The reuse of brownfields is contingent upon the success of a variety of site engineering and environmental reclamation technologies, such as bioremediation, grading, capping, wastewater purification systems, and monitoring, to name a few. The prevalent approach to the remediation of industrial sites is typically shrouded in scientific and legal expertise. However, recent government initiatives concerning the cleanup of brownfields have focused research, planning, and design efforts on their redevelopment potential within the field of landscape architecture. By responding to the unique biophysical site conditions and integrating the formal implications of remediation technologies into the site design process, some landscape architects have seized the opportunity to engage in the systematic transformation of these spoiled sites into possibilities of futures unknown.

This thesis considers the multiple interpretations of what has been termed the "post-industrial" condition by such landscape architects as Julie Bargmann, James

Corner, Nial Kirkwood, and Peter Latz. Throughout this inquiry, the post-industrial condition refers to the contemporary mosaic of derelict sites such as chemical, nuclear, and oil production and storage facilities, manufactured gas plants, transportation corridors, heavy industrial plants, factories and working waterfronts. These former industrial sites are remnant forms of previous industrial practices and processes. In Ecological Design and Planning, Mark Johnson (1997) writes, "The form of the city devolves from the extension of linear constructs, designed to meet singular needs" (p. 168). As such, this interpretation of the landscapes of modernity regards the pattern of former industrial sites as an anthropocentric mosaic, representative of the industrial age of progress.

These lost sites of production are beginning to acquire primary significance for developers, planners and designers who view their central location within cities and their proximity to existing infrastructure as attractive incentives for investment. Considered as opportunities rather than as liabilities, the hundreds of thousands of brownfields, polluted rivers, derelict waterfronts, abandoned military bases, landfills, railroad yards, and manufacturing plants represent a prodigious frontier at the nexus of contemporary practice in landscape architecture, urban design, environmental remediation and community redevelopment. As part of the human endeavor of landscape transformation and occupation, the reinhabitation and re-creation of this landscape is acknowledged and accepted. The post-industrial condition is at once a reminder of a destructive industrial past, and at the same time, home to a more ecologically minded future. Despite its uniqueness in form and texture, the post-industrial condition remains rooted in the shared landscape of ecological and cultural processes on which we depend. In fact, due to the

prevalence of derelict lands, we are inevitably faced with the task of remaking this landscape. As a means of resisting current trends in laissez faire land development, this form of reinvention rejects the homogenization of the environment by accepting the inherent idiosyncrasies and contradictory narratives of spoiled sites. The question this thesis asks is how will we choose to deal with these sites.

The main objective of this thesis is not to debate whether the post-industrial landscape should be reclaimed, restored, or redeveloped, but, rather, to critique the nature of such actions. More specifically, this thesis examines the relationship between site remediation technologies and the landscape architecture project, as well as its cultural effects enacted through time. This interpretation proposes a deconstruction of the post-industrial landscape into a multitude of forces, some of which have denied the expression and evolution of landscape processes; while others provide hope for its resurrection. The pervasiveness of deteriorating industrial sites is a reminder of an industrial heritage that valued short-term efficiency of economic production above all else. This rational, reductionist worldview manifests itself in an artificial exclosure of the boundaries, right angles, sharp edges, and straight lines of abandoned industrial corridors, deteriorated waterfronts, despoiled landfills, empty railroad yards, and vacant manufacturing plants. These wastelands further delimit the post-industrial condition by isolating and fragmenting natural systems, and replacing them with sites void of the geomorphic and biological intricacies of place. This instrumentally territorialized order has also disturbed social relations by marginalizing communities along the urban peripheries of lost space.

A creative project of regenerating these sites, however, provides direction on how natural processes and cultural transformation can work to reclaim ground. As such, the

resurrection of many derelict landscapes exhibits a complex mosaic of recovery and transformation. Ecological processes, such as disturbance, succession, regeneration and metamorphosis, are signifiers of change already present in the post-industrial landscape. Indicative of ecosystem response and recovery, these processes form an environmental matrix within which the reinvention of cultural event-fields occurs. The overlay of urban park design considerations creates fertile ground for play, inquiry and re-creation.

This re-interpretation of the post-industrial landscape averts the debate over the necessity of either ecological restoration or industrial preservation. Rather than erase all traces of the industrial past by attempting to recreate an idealized view of nature, this approach advances a critical project of subversive design that seeks to reveal, rather than conceal our engagement with the landscape. Thus, this project responds to the absurdity of remediation projects that maintain the same linear thinking that typified the "generation of progress". Barbara Adam (1998) describes the shift from such singular-objective problem solving to a "timescape perspective" as allowing one

> "to move from single and dualistic approaches and abstract, functional perspectives to knowledge that emphasizes inclusiveness, connectivity, and implication. It promotes understanding that acknowledges the relativity of position and framework of observation whilst stressing our inescapable implication in the subject matter and acknowledging personal and collective responsibility. It explicitly incorporates absences, latencies, and immanent forces, thus helping us to move away from the futile insistence on proof and certainty for situations characterized by indeterminacy, time-lags of unspecifiable durations and open dispersal in time and space" (p.55).

By utilizing environmental design knowledge to expose the most ecologically and socially regressive aspects of our treatment of industrial culture and cities, this approach seeks to instigate radical change. Eschewing concealment in favor of transparency and juxtaposition, conflicts are confronted and "intended to unsettle a situation that itself

might contain the seeds of a better social and urban condition" (Tschumi, 1994).

This vision incorporates, and even appropriates, existing and remnant patterns of development, infrastructure, and landscape into new construction. Rather than erasing past practices in an attempt to flex artistic muscle, or assuage our nostalgic sense of a pastoral nature that may never have existed *in situ,* this approach "begins to imagine how natural and industrial processes could form a synergistic mosaic rather than an oppositional endgame" (Bargmann, 2000). The task of re-presenting the past and projecting the future through a combined artistic, emotive, and ecological sensitivity, suggests a better alternative to landscape recovery than either restoration or preservation alone. While supporting the goal of restoring ecological health and function, this approach seeks to broaden the scope of the restoration project beyond scientific determinism towards the reciprocity between cultural and ecological renewal.

The reconciliation of nature/culture conflict attempts to manipulate and reconfigure both natural processes and social tendencies in order to confound commonly held conceptions of landscape. While answers lie in the comprehensive readings of site processes, the broader cultural, political, socio-economic and environmental contexts demand that these inquiries and interventions respond to the present. The focus shifts from viewing landscape as artifact to appreciating the constitutive processes of the landscape project that simultaneously operate within and reflect on culture. Similarly, the recovery of the postindustrial landscape is less a forging of a new aesthetic style, than a pointed ambition to redirect an ever-expanding field of forces and future possibilities.

The process of dialectical inquiry is supported by new alternatives to landscape reclamation, restoration and remediation. This approach has recently evolved from re-

interpretations of the post-industrial landscape that accept the limitations of arriving at a complete understanding of past activities and conditions. In recent years, a number of landscape architects have sought to balance ecological recovery with the human re-inhabitation of the landscape. Compelling works have emerged that draw from sources both sublime and mundane, exposing both *The Sacred and The Profane* (Eliade, 1961). The recent surfacing of this landscape project type offers the possibility of mediating between the elusive science of ecology, the often-individual endeavor of art, and the dialectics of cultural criticism. Landscape recovery, as practiced by such landscape architects as Julie Bargmann, Richard Haag, George Hargreaves and Peter Latz, operates at the nexus between the renewal of natural systems, the expression of artistic representation, and the alleviation of cultural atrophy. The eidetic content of these works remind us of the need to formulate a vision that looks beyond the mere aesthetic and ecological procedures of making landscapes lest "they might also conceal and compensate for some of the more problematic aspects of modern life" (Corner, 1999).

By "increasing the scope of the landscape project in a broader cultural milieu", the transformation of derelict industrial sites poses new opportunities to realize the potential of a truly "synthetic and strategic art form" (ibid.). Recognizing that human invention plays a significant part in the re-creation of industrial sites, these landscape architects "align diverse and competing forces (social constituencies, political desires, ecological processes, program demands, etc.) and create newly liberating and interactive alliances" (ibid.). Landscape architects, by nature of their interdisciplinary training, are poised to direct the reconfiguration of the post-industrial landscape.

METHODOLOGY

This thesis directs a process of inquiry toward the redesign of an abandoned industrial corridor on the eastern edge of downtown Athens, Georgia. The objective is to explore an approach to design that engages the industrial past, rehabilitates for an ecological future, and interprets program strategies for an urban park. Research and design development complement and reinforce each other. Similar to the endeavor of landscape recovery, this thesis represents a reflexive and contextual search for ideas, rather than strict adherence to, and application of, final solutions. The purpose is to reveal the potentialities for recovering the post-industrial landscape in evocative and ecologically responsible ways. The project aims to invoke the recovery of the post-industrial landscape as a manifestation of a synthetic and inventive approach to reconciling the primary considerations of design; i.e.: the concepts of program, structure and function, both instrumental and ecological, within a broader context of cultural engagement and activity.

Specifically, the design proposes an experimental landscape that invites the public to observe the procedures of phytoremediation, on-site stormwater management, and old-field succession. Opportunities for the public to engage in the monitoring of ecological health indicators would be incorporated into the overall management plan. This approach underscores the significance of an inter-disciplinary approach to landscape recovery that envisions and articulates the possibilities of collaboration within the proposed College of the Environment, University of Georgia. Conceived as an individual inquiry into the implications of theoretical directives, the success of this project would ultimately depend on the combined efforts of a team of ecologists, bioengineers, landscape architects,

students, local residents and business owners, as well as local and state government agencies.

SCOPE OF INQUIRY

An equally important consideration will be the appropriation of the remnants of industrial archaeology, both visible and invisible, as an ordering system against which ecological reorganization and cultural reflection take place. First, there is the question of which contents of a site are most representative of the technological, environmental, and societal changes in post-industrial society. Questions relating to the interpretation of industrial landscapes will structure the exploration of invisibility, latency and temporality (Adam, 1998). Concepts derived from landscape ecology are utilized to structure an organization of the site. Also addressed will be the issue of whether artistic gestures to "reveal" natural processes are anything more than mere allusions to ecological ghosts.

Chapter 1 summarizes and critically examines three design responses to despoiled landscapes. Industrial reclamation by landscape architects offers various approaches that integrate the fields of industrial archaeology, ecology, and design. The projects are selected based on a preliminary assessment of the designer's success in confronting the complexities of environmental and social problems. Alex Wall (1999) is referring to such landscapes, when he speaks to their capacity for "enabling the functioning matrix of connective tissue that organizes not only objects and spaces but also the dynamic processes and events that move through them" (in Corner, p. 233). The projects presented below represent the development of an intimate understanding of the complex forces influencing the site.

The following method of analysis adapts Corner's (1999) three part methodology for evaluating the landscape architectural project: 1) Ecological diversification and succession, 2) social program and utility, and 3) retrieval of memory and the cultural enrichment of place and time. In particular, the question of how these three conditions coexist, compete, intersect, and interact within each of the case studies is directed by contemporary landscape theory. Although held suspect by many in the design community, critical theory is utilized as an invaluable source of confronting cultural assumptions by engaging in an on-going project of self-reflexive inquiry.

The impetus for this inquiry comes from a belief, borrowed in part from Lucy Lippard (1997), that the juxtaposition of dissimilar realities may join to develop an unexpected, newly inventive reality. This idea serves as basis to environmental design that seeks to invoke questions, rather than merely placate our appetites for a picturesque or pristine landscape. Uniquely transformed landscapes have the capacity to realign our commonly held notions of landscape representation and construction. For each of the sites, the following questions will be specifically addressed:

- *To which points in time does the design intervention respond? What time is this place?*
- *Are ecological restoration and/or industrial archaeology compatible with urban park design?*
- *Do the artifacts of industry provide a datum against which ecological renewal and reorganization take place?*
- *Do the symbolic icons which evoke memories of the place engage the user, or are they merely left as relics to assuage our nostalgic tendencies?*
- *How are fundamental ecological processes and remediation technologies of the site managed and revealed?*
- *What are the relationships between these processes and the users of the site?*
- *Are sequencing and collage used effectively to emphasize contrast and overlay, or the intersection of designed vs. naturally occurring elements?*

- *What are the formative effects of the landscape with regards to how it functions and affects change over time?*
- *Is the design socially and politically neutral, or does it advocate a particular interpretation of the site's history?*

Chapter 2 examines the current theoretical interest in the topic of landscape recovery. This resurgence in critical thinking about the social and ecological values of the landscape project derives from recent design explorations into the transformation of the post-industrial condition. The author examines both the historical and present socio-economic contexts within which the landscape project is founded. The polemics of environmentalism and the built landscapes that result from the application of a scientific, objectivist thought processes are compared to the landscape project as conceived by the avant-garde. The dichotomy between the polemical landscapes of the "Natural" school and the dialectically opposed operations of the avant-garde is gauged as an expression of a false distinction that divides humans from the natural processes in which they engage. Chapter 2 concludes that landscape exists conceptually as a dynamic social construction, enabling both the exploration and revelation of natural and cultural phenomena, and thereby exposes the artificial dichotomy between humans and their natural environment.

Chapter 3 begins by examining an approach to design that finds its origins in the ancient dialectic between theory and practice. The "praxis" of landscape architecture considers both the theoretical influence and practical application of eidetic content, hermeneutics, and representation. As such, the landscape project, informed by processes of transformation, invention and interpretation, seeks to reestablish lost philosophical connections, as much as it attempts to recover lost spaces. The author presents an argument for recovery of the landscape project as both a searching and suggestive

endeavor. The conceptual frameworks from two case studies are identified to 1) depict the design process that directs this thesis and, 2) describe a typology within which the design application of transforming a lost space into an urban park takes place.

Chapter 4 introduces the design application component of the thesis through site description, history and analysis, conceptual imagery, design narrative, program development, and finally, landscape management goals and objectives. The purpose of this design exercise is to explore the formal implications of *exemplary actions* that seek to develop the multi-disciplinary collaboration of ecology, industrial archaeology and landscape architecture.

Chapter 5 concludes with reflections on the simultaneous pursuit of physical design and philosophical inquiry. This project of critical design and analysis attempts to contribute to an exposure of the most pervasive aspects of environmental and cultural atrophy. However, the landscape architecture project is seen to represent a continual search for new beginnings, thus enabling positive constructions of both places and ideas. The physical manifestations and implications of the design process are discussed in relation to the site design application. While the proposed design gives form to a selective set of embodied theoretical directives, subsequent design exercises would inevitably result in multi-variant body of solutions. Thus, a sense of indeterminacy is seen not only as having formal design implications for the given park design, but also provides direction for further inquiry and permutations. Finally, seen with the broader context of post-industrial conditions of contamination, fragmentation, and deterioration, this experimental landscape signifies a process of metamorphosis, regeneration and renewal as a hopeful reminder that not all has been lost.

CHAPTER 1

APPROACHING THE PAST : RESOUNDING THE PRESENT : ENVISIONING THE FUTURE

> *"Landscape is presented as a place of escape from the ills of the present and anxieties about the future. This cycle of sentimental aestheticization compounds the difficulty of forging a critical and fresh landscape. Instead the tendency today is to treat landscape as a giant commodity… but also of a depressing cultural atrophy whereby all hope for the future is replaced by too high a regard for past accomplishments. The sub-sequent re-creations of previous worlds might not offend anyone were it not for their absolute absence of hope and invention; that they might also conceal and compensate for some of the more problematic aspects of modern life ought to be further cause for skeptical reflection" (Corner, 1999).*

In approaching the post-industrial condition, one is made aware of the potential in creatively intervening and interpreting the past, rather than merely concealing abuses of the past. This endeavor challenges the polemical landscapes of both environmentalists and the avant-garde to confront the past and shape an ecologically minded future. Until recently, ecological restoration projects typically erased signs of abuse from former industrial practices to assuage our nostalgic sense of pastoral Nature. At the same time land artists, such as Robert Smithson and Michael Heizer, responded in the tradition of landscape art and design, by seizing the aesthetics of rust and ruin. As seen here, the task of re-presenting the past and projecting the future through a combined artistic, emotive, and ecological sensitivity manifests a synthetic and inventive approach to reconciling the primary considerations of design, such as the concept of function, both programmatic and ecological, within a broader context of cultural remembrance and recovery.

The objective of this inquiry is to explore an approach to design that recognizes the industrial past while establishing the potential for an ecologically responsible future. Specifically, the use of industrial archaeology will be explored as a datum against which ecological renewal and reorganization may take place. In light of the physical location of many brownfields and former industrial sites, it is reasonable to incorporate remnant patterns of land use and infrastructure into redevelopment schemes for the connectivity they may provide.

To utilize industrial archaeology as both an ordering device of future use and as a hermeneutic principle relating past events to present understanding is to engage responsibly in the reuse of derelict lands. The Society for Industrial Archeology, based at Michigan Technological University, defines the field as "the recording, study, interpretation, and preservation of the physical remains of industrially-related artifacts, sites, and systems within their cultural and historical contexts" (http://www.social.mtu.edu/IA/IAWeb/Program.html). However, industrial archaeology is not used here to commemorate an industrial era. Nor is it appropriated as a symbol of our misanthropy. Rather, industrial archaeology forms the basis from which spatial organizations might be determined, and around which future events unfold. For example, existing infrastructure, such as railways and industrial roads, might serve as catalysts for the development of linear parks, buffer zones, or ecological corridors. Artifacts and buildings may be preserved to interpret significant contributions and achievements of technical expertise. Yet, the patina of age due to atmospheric weathering and other markers of the passage of time serve as reminders of nature's ability to reclaim these industrial ruins. Against such backdrops of decay and deterioration, wastelands give way to ecological renewal,

succession, and new forms of reorganization. Therein one discovers an industrial archaeology that accepts the evolutionary nature of time and an ecology that is neither natural nor restored.

As Anne Whiston Spirn (1998) argues in The Language of Landscape, "Appeal to the past for authority is as problematic as appeal to nature" (p. 250). In describing Bloedel Reserve on Bainbridge Island, Washington she reminds us that not unlike the former industrial sites of Gas Works Park and Duisborg-Nord Landscape Park, the transformations "do not return the site to some imagined, ideal condition before humans cut the forest, but create a garden in which the evidence of human use – the tree stumps, for example – is incorporated into the whole" (p. 262). As a study of the relationship between the *ideas* of "nature" and "technology", the recovery of industrial sites derive their power of association and interpretation through the use of juxtaposition, paradox, and the simultaneity of "artful construction and organic regeneration" (p. 260).

GAS WORKS PARK

Fragments of an industrial past, its invisible traces, and the delicate hand of Richard Haag comprise an ongoing evolution of this Seattle, Washington site's history. More than a collection of individual gestures, the minimal design interventions act as connective tissue encouraging the cultural re-inhabitation of place while simultaneously allowing the rehabilitation of soil and groundwater. The processes of reconnection reflect a conceptual emphasis on indeterminacy and open-endedness of the physical, biological, chemical and psychological constructions of the park. While invisible biological processes act as sutures of wounds, physical scars remain as reminders of past misdeeds.

In his approach, Haag selectively edits an exposition of evidence from the past and exposes the indeterminacy of the post-industrial condition. Gas Works Park challenges the opposition between the subjugation of nature and the reverence of nature; between the interrogation of loss and the celebration of renewal (Meyer, in Saunders, 1998).

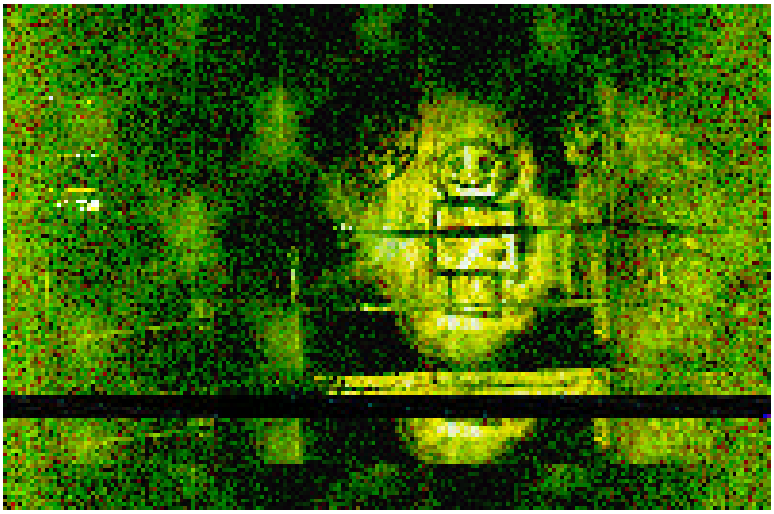
In the presence of industrial monumentality, or what Elizabeth Meyer terms the "technological sublime", the designer does more by doing less. In the case of Gas Works Park, the icons of consumptive industrial technologies are the centerpieces around which unknown, non-linear, and non-fixed activities have occurred through time. In particular, the graffiti on the rusting surfaces of the now fenced off gas towers is an additional layer of accrued cultural meaning (**see Figures 1.0 – 1.3**). The juxtaposition of collaged cartoon images, quotes, and names of lovers against the stalwart forms of foregone industry hint at the unpredictable nature of forces that are beyond the original designer's intent. They further signify the on-going re-creation of the site.

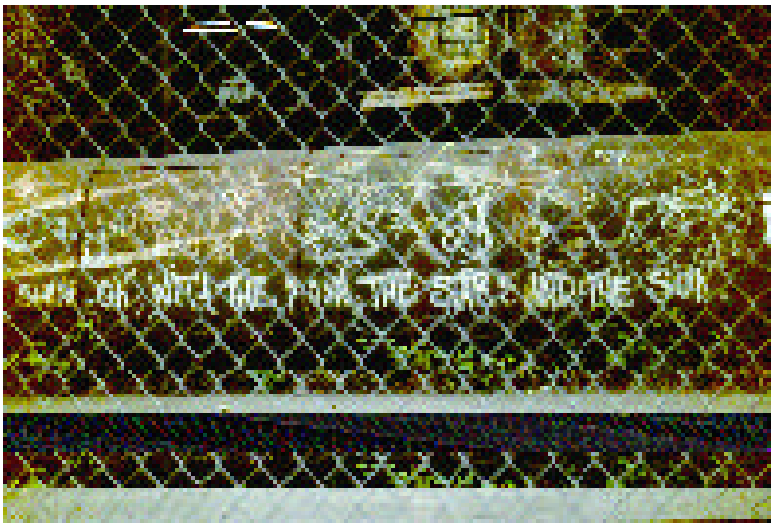
Similarly, through an ongoing project of bioremediation, the latencies of soil and groundwater contamination are slowly transformed. Haag (1998) explains the phyto-bioremediation process that was developed in 1972 at Gas Works Park:

> "Natural processes were stimulated by deep tilling into the site surplus saw dust and other biomass mixed with sewage sludge. The indigenous bacteria that had evolved during the fifty years of pollution were the principal neutralizing agent followed by grass and trees, phyto-remediators" (p. 72).

Unfortunately, aside from interpretative signage provided by the Washington State Department of Ecology, the bio-chemical processes of the soil ecology and hydrological cycle remain hidden from view. Few users of Gas Works Park have recognized the grass, or the still invisible microorganisms, for what they have accomplished. In this case, restoring ecological health is not equivalent to revealing

natural processes. Unlike Haag's Bloedel Reserve, the purpose here was not to "render the invisible more visible by exploiting the physical characteristics of disturbance through changes in scale, spatial structure and surface characteristics" (Meyer, in Saunders, 1998).





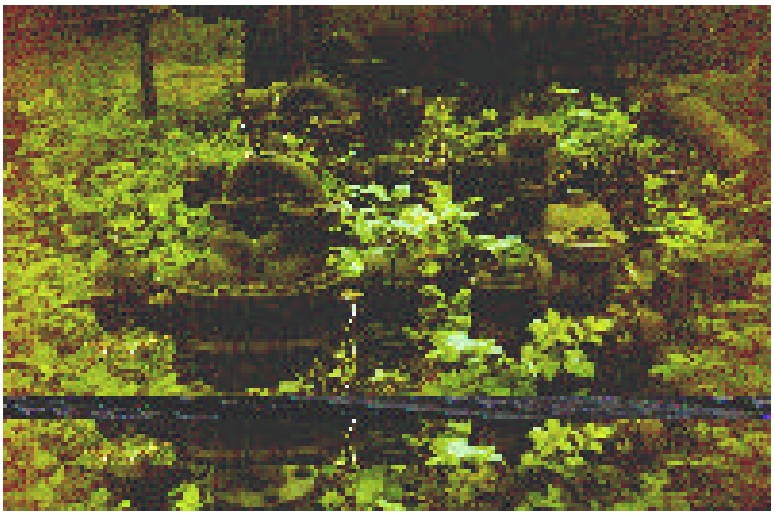


Figure 1.0 – Gas Works Park (photographs by author, 1999).

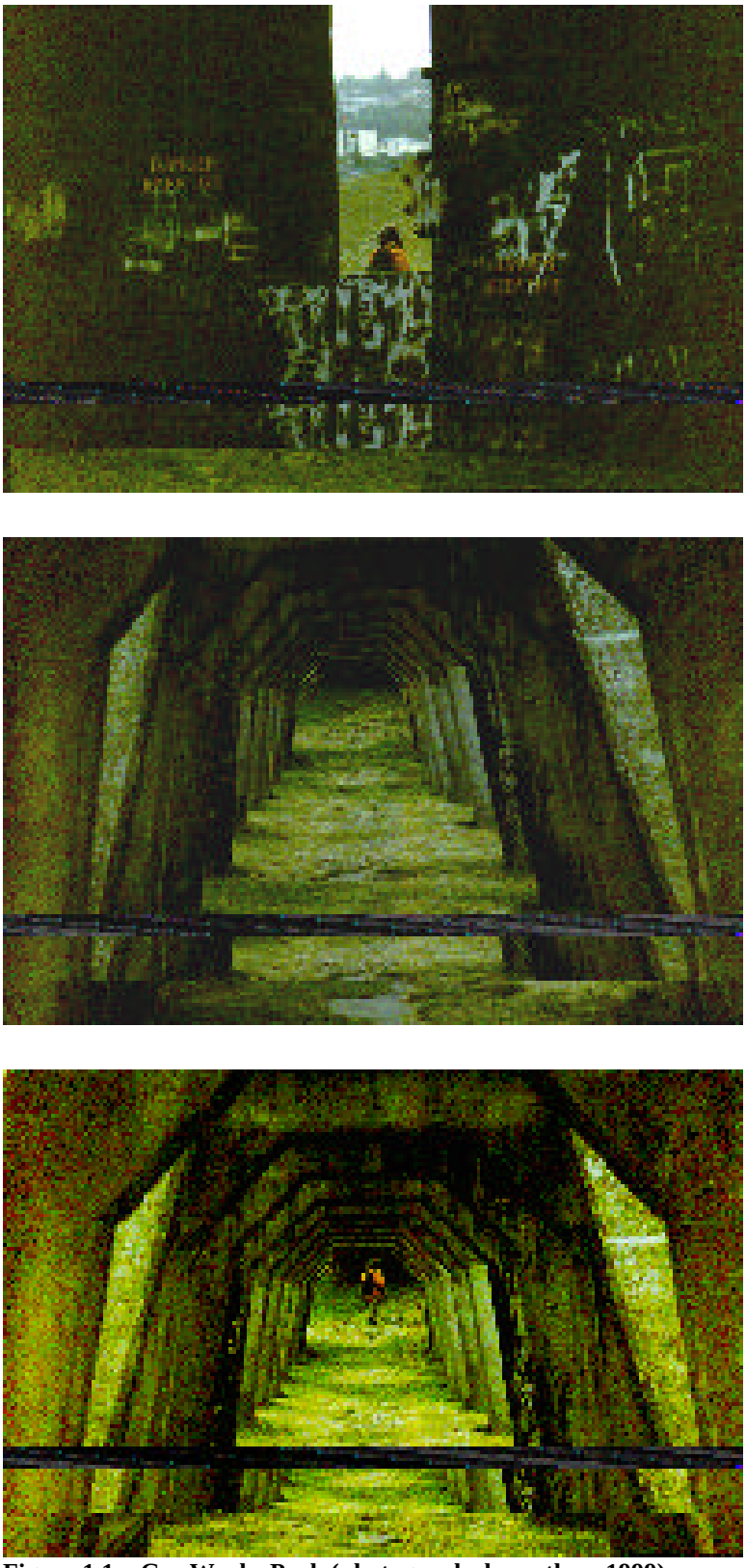


Figure 1.1 – Gas Works Park (photographs by author, 1999).

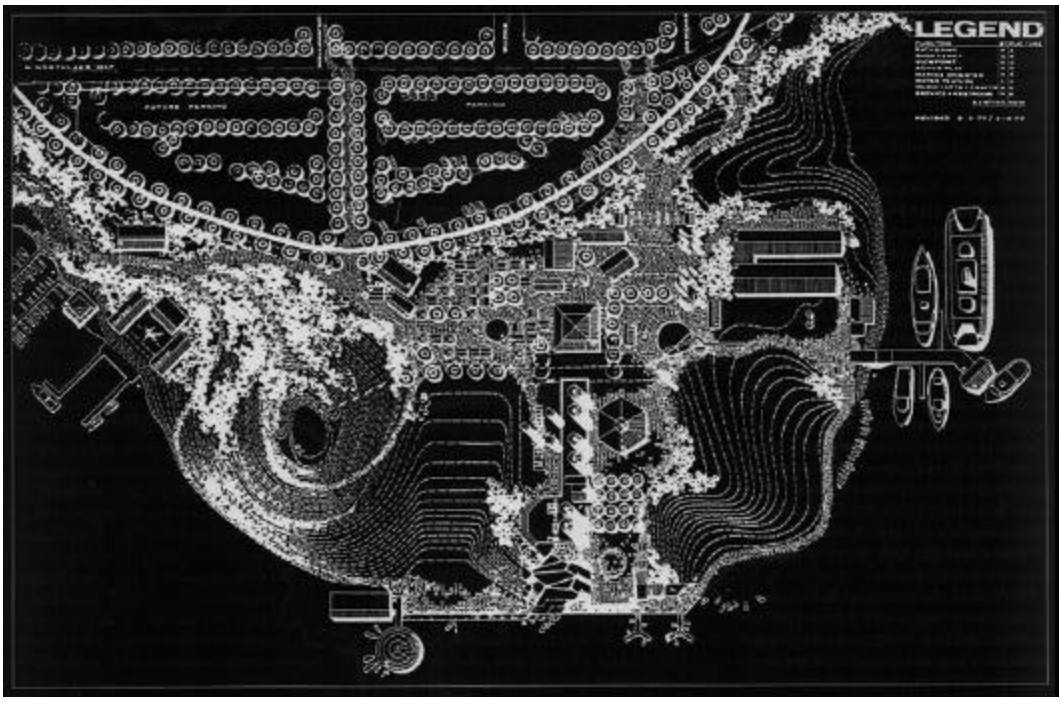


Figure 1.2 – Gas Works Park Masterplan (Haag, 1972).

Figure 1.3 – Site photographs by Brenda Brown, 1993.

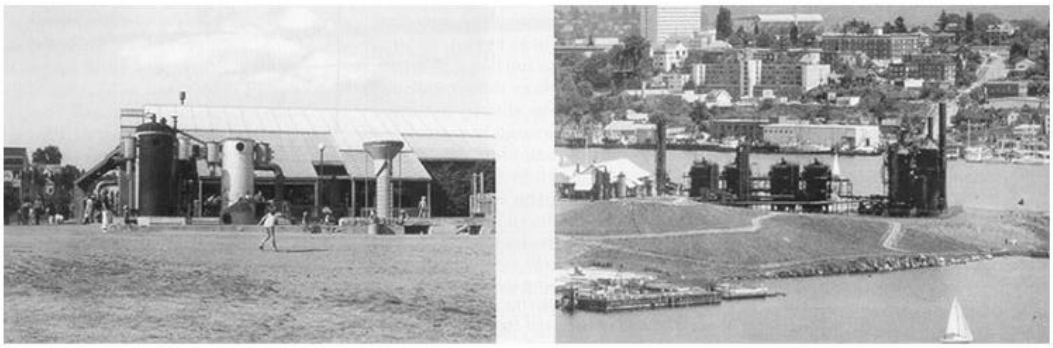


Figure 1.4 – Site photographs by Richard Haag Associates.

DUISBORG-NORD LANDSCAPE PARK

The symbiosis between ecological renewal, cultural recovery, and adaptive reuse is represented in Duisborg-Nord Landscape Park, by Peter Latz + Partner. Site of the abandoned Thyssen steelworks, this regional park is the central green zone of an overall redevelopment strategy within the Emscher Region of Germany. Located between the urban districts of Hamborn and Meiderich, the former industrial heartland of Europe, the park covers a total of 200 hectares; the abandoned Thyssen blast furnances and its other industrial relics dominate 20 hectares of the site. These industrial skeletons provide a datum around which the regeneration of site processes occurs. The design strategy at Duisborg-Nord Landscape Park works to achieve the following objectives:

1) The preservation of existing vegetation and industrial buildings including the blast furnaces.
2) The provision of a variety of leisure activities, play facilities, and areas for cultural events.
3) The creation of seven 'development areas' within the site.
4) An 'industrial history trail' and 'project trail' created as a means of exploring and understanding the site.
5) The renovation of some of the existing buildings for use in employment projects.
6) As part of the whole Emscher Park regeneration program, the reconstruction and leaning of the River Emscher where it passes through the park. (www.stud.uni-hannover.de /~voell/elasa/archive/UN96/UN96-8.html)

The park, a main component of a regionally planned green corridor system, is itself inscribed by a network of recreational areas, incorporating a diversity of programmatic design elements:

1) A water park based on the ecological regeneration of the old Emscher Canal system; (see **Figures 2.1 – 2.4**)
2) Gardens that serve as a testimony to the area's industrial history; (see **Figure 2.5**)
3) Promenades and parks along railway lines that will help connect the park with adjoining cities; (see **Figure 2.6**)
4) Buffer zones between the parks which can be used by local residents for a variety of recreational activities; (see **Figure 2.7**)
5) Preservation of the steelworks as an active museum of the smelting process and technical history of the blast furnace (www.epa.gov/swerosps/bf/html-doc/emscher.htm) (see **Figure 2.8**)

Figure 2.1 – Stormawater drainage runnels

Figure 2.2 – Aquatic Park: Lily-cleansing pond

Figure 2.3 – Former cooling pond

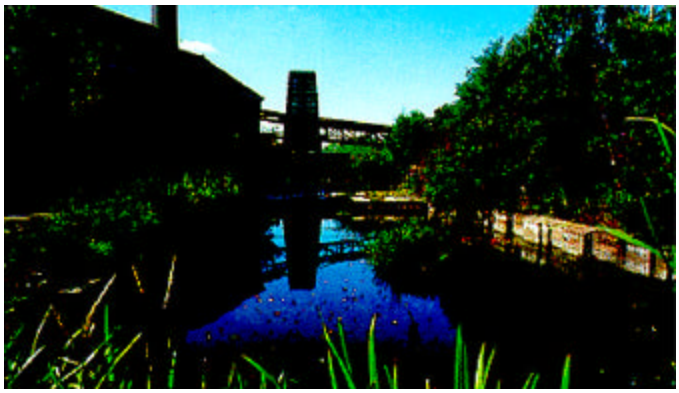


Figure 2.4 – Water purification canal

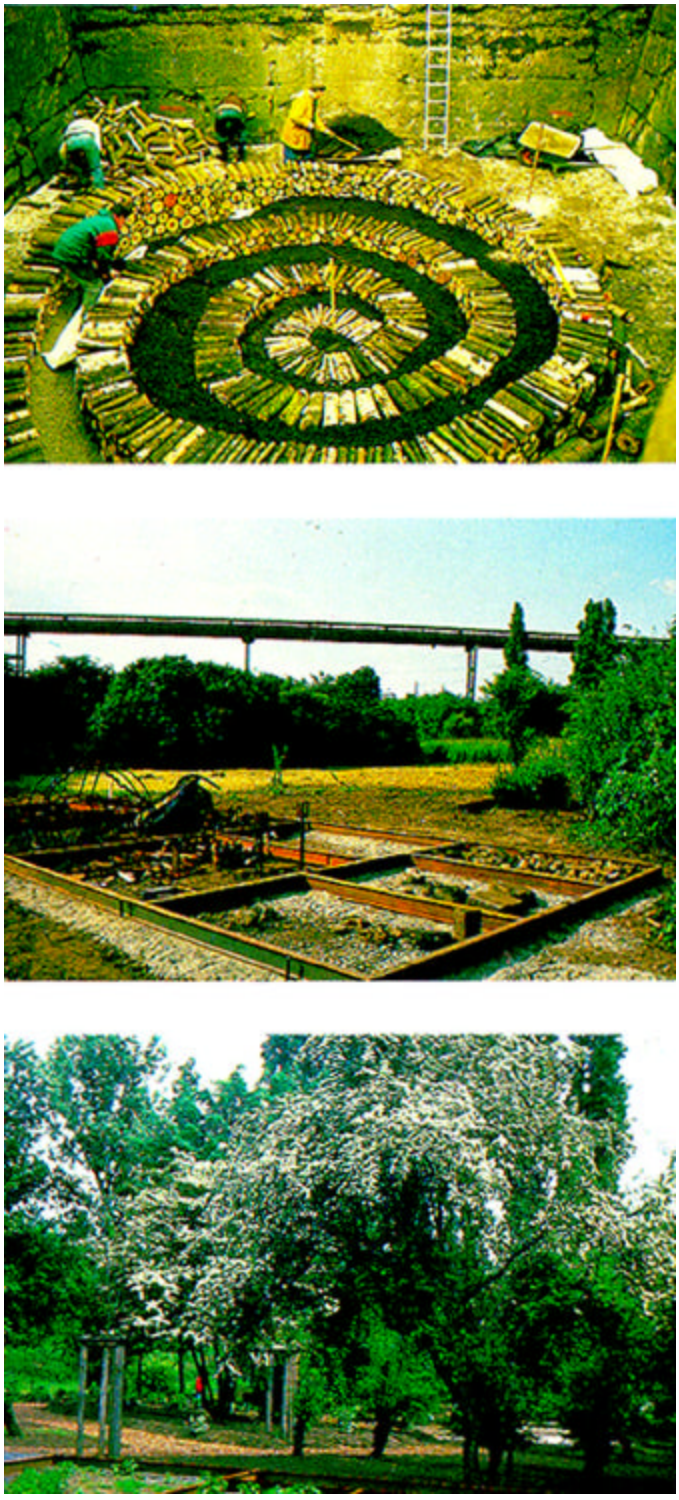


Figure 2.5 – Remediation Gardens

Figure 2.6 – Bridges: New + Old

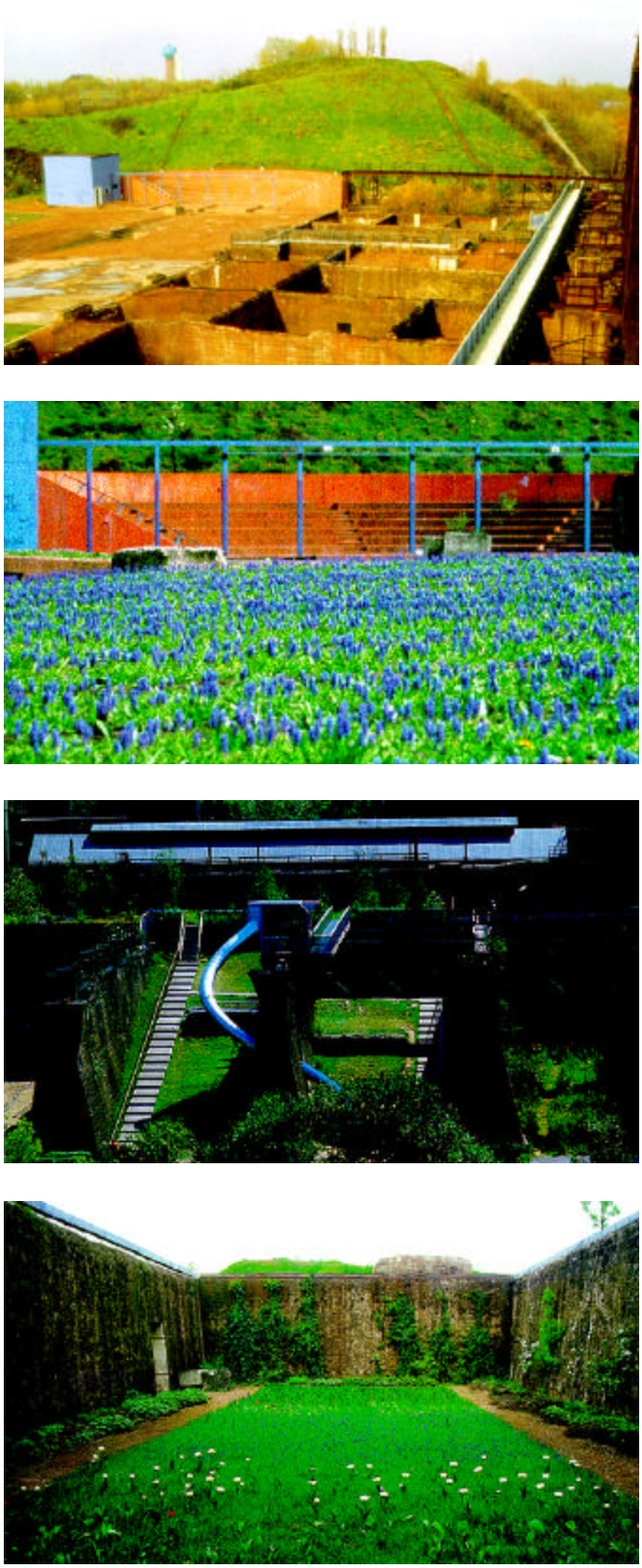


Figure 2.7 – Open-ended recreation spaces

Figure 2.8 – Industrial archaeology + design

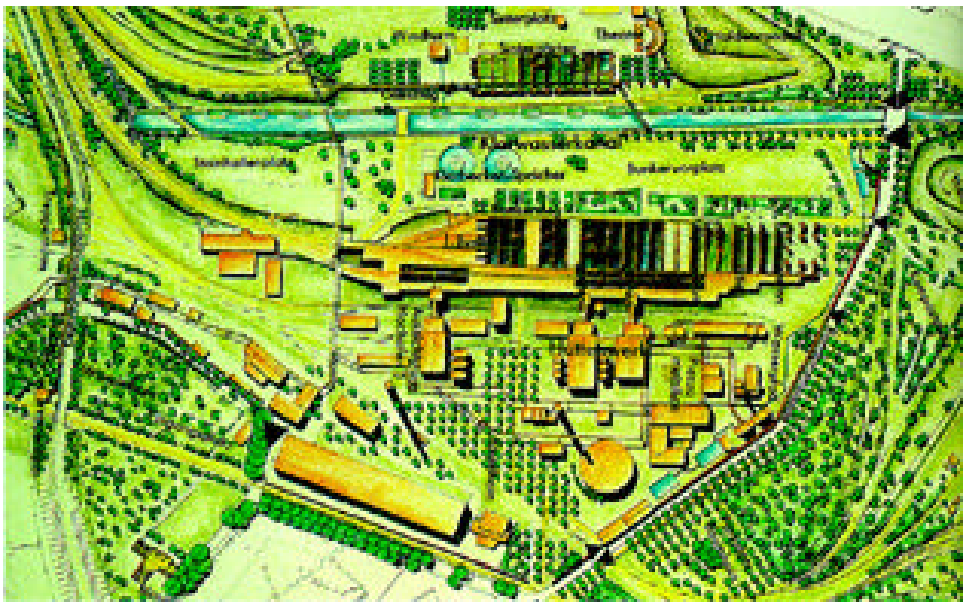


Figure 2.9 – Duisborg Nord Landscape Park Master Plan

Duisborg Nord Landscape Park (collage by author, 2000)

The vast scope of the park demanded a detailed, site-specific approach to the design of its individual components. Yet, a systematic conceptual framework of recreation, regeneration, and reconnection governs the integration of these parts into a comprehensible, functional whole.

The larger regional effort was initiated by a comprehensive plan to restructure ecological systems, namely the River Emscher, thus forming the basis of sustainable future development. This planning effort, developed to remediate contaminated land and reengineer watercourses, reintroduce green infrastructure as the connective tissue between disparate systems. The long-term objectives of reestablishing economic development are based on the overarching goal of revitalizing regional ecological health. Linking together remnant patches of open space, Duisburg-Nord Landscape Park acts as a "green-stepping stone" that unites the industrial past with an ecological future. (http://www.unimelb.edu.au/infoserv/urban/hma/hurban/1997ql/0056.html). By juxtaposing and interweaving these lost fragments with newly designed public spaces for leisure and recreation, Latz + Partner have orchestrated a conversation between disparate elements and provoked unlikely companions in a newly conceived landscape.

The regeneration of soil systems and surface water systems is being utilized as a design opportunity. Various remediation technologies have been integrated in the site design process. With the participation of local gardeners, experimental gardens are being built that utilize the reuse of waste materials from former production processes. This remains an on-going experiment in order to develop a plant palette for the park, as well as to study plant types that are well suited to various soil contamination conditions. While much of the soil was removed from the site, smaller areas are being used as testing

grounds for various methods of phytoremediation. Located within the walls of old mineral deposit areas, these small garden rooms are formal expressions of the invisible traces of industrial contamination. Similarly, a large pile of waste material has been seeded and planted over, providing a lookout point over the park as well as serving as a reminder of the extent of past operations.

Within a post-industrial framework of historic structures and landscapes, such as the three blast furnaces, warehouses, cooling ponds, railroad corridors, and drainage channels, the goals of industrial preservation have been integrated successfully with the ecological renewal of natural systems. The processes of decay and oxidation on the surfaces of the iron and steelworks exhibit a similar patina as that of the structures at Gas Works Park. Both Latz and Haag handle the existing by demonstrating a profound understanding of the site's accrued layers of meaning. The intent to invoke multiple interpretations neither negates, nor fundamentally supports, an ethical stance by either designer. However, the state of ambiguity and indeterminacy in the design of each park reveals that much more than a gesture to the industrial past is being made.

Perhaps alluding to the ecological costs of past practices, Peter Latz says, "The point is, where is the imagination most challenged, in a state of harmony or in a state of disharmony? Disharmony produces a different statement, a different harmony, a different reconciliation…" (Latz, in Weilacher, 1999). Latz + Partner have re-created an ecological park with powerful and suggestive links to a memorable, yet tenuous past; staging the metamorphosis of complex socio-environmental interactions and associations. As James Corner (1999) suggests, inventive landscape projects, such as Duisborg-Nord Landscape

Park, “actively renew the significance of those cultural and natural processes that undergird the richness of all life on earth” (p. 13).

TESTING THE WATERS, VINTONDALE PENNSYLVANIA

More directly approaching the act of remediation as landscape design, Julie Bargmann and Stacy Levy combined acid-mine drainage remediation, industrial archaeology and recreation into a new 45-acre park in Vintondale, Pennsylvania. The site is sculpted and divided into a series of three program areas: the Treatment Garden with pH ponds and the Litmus Garden; the Emergent History Wetlands; and the Community Uplands (**see Figures 3.0 & 3.1)**. Synthesizing such technical and cultural pursuits, that are often thought of as discrete, requires the ability to merge disciplinary boundaries beyond narrowly conceived notions. As such, ecological design provides solutions that address a multiplicity of complex problems. Bargmann’s holistic and systematic approach to science, landscape design, representation, history, and cultural interpretation call into question the reductionist, linear constructs of modernity that are responsible for the post-industrial landscape she attempts to recover.

Acid-mine drainage (AMD) is responsible for much of the surface and groundwater contamination throughout southwestern Pennsylvania. AMD derives from the slag of abandoned mines, forming when runoff absorbs the minerals from waste piles. By dramatically increasing the pH levels of surface water, AMD kills almost everything in its path and has polluted more than 3,400 mile of waterways in the state of Pennsylvania (Barmann and Levy, 1998).

Figure 3.0 – AMD Remediation Park, Vintondale, Pennsylvania (Bargmann and Levy, 1999)

Working together with historian T. Allan Comp, director of the Southwestern Pennsylvania Heritage Preservation Commission, and Robert Deason, hydrogeologist with EarthTech, Inc., Bargmann and Levy (1998) designed a bioengineered water treatment system, a series of retention basins and constructed wetlands, as a "regenerative catalyst for a contaminated ecology and a declining community" (p. 38). Further, by engaging local citizens in the reclamation planning process, the design team was able to articulate the multi-functional aspects of landscape transformation to the public. Thus, social change stemmed from the community's own testimony, ambitions, and concerns being represented and recovered in the landscape. Once a mining town of Eastern European immigrants and Americans, what was left of the Vintondale coalworks is waste and spoil. Referred to by the locals as "yellow boy", a rust-colored metal concoction makes it way through Blacklick Creek before emptying into the Conemaugh River watershed.

The process of transforming the surface waters from a liability to an opportunity will occur through an artful elaboration of natural processes, inviting those who live nearby to literally watch it happen before their eyes. As the metals settle out in each basin the water changes color, indicating the progression of treatment from pond to pond, "from acidic orange, to pea green to alkaline blue green" (ibid., p. 40). Before emptying into the creek, the water is cleansed further in a constructed marsh and wetland area. Relating to the changing color of the water, the Litmus Garden is planted in a sequence of natives that mimic, through their seasonal coloration, the series of treatment basins.

Conceived in opposites such as, *crisis : opportunity; polluted streams : life-sustaining water; forgotten fields : reclaimed landscape; eroding town : community park;*

invisible history : revealed heritage, this design intervention clearly articulates a socio-political interpretation of events. However, challenging the binary thinking that created the existing conditions to which they have responded Bargman and Levy have instigated a reconsideration of the relationships inherent in the apparent nature/culture dichotomy.

AMD Site Collage (by author, 2000)

CHAPTER 2

THE EMERGENCE OF POST-INDUSTRIAL LANDSCAPE THEORY

Theoretical interest in the topic of landscape recovery derives from recent design explorations into the transformation of the post-industrial condition. Through both practical applications, or "exemplary actions" (Tschumi 1994), and their associated theoretical and representational exercises, many more questions than answers have been raised by the search for ideas that seeks to amplify the impact of the landscape project. Despite a climate of apparent economic prosperity, the discipline as a whole will eventually be forced to respond to the disquieting state of cultural and ecological deterioration. It should do so now, that it might reaffirm its role as a socially relevant practice engaged in shaping, rather than merely reflecting the current values of an economic system that has resulted in the need for such interventions.

The recovery of landscape does not infer a process of returning disturbed areas to a pre-development condition. Nor is this inquiry about an individual, or selective group, effort to formulate a body of theory towards the next "ism". Certainly this growing body of knowledge is greater than the sum of the individual projects that constitute beginnings and uncover potential direction. Rather, the recovery of landscape represents a striving for a position, from which landscape is measured by more than just aesthetic or ecological values alone, or the simple juxtaposition or compatibility of the two. James Corner envisions involving the landscape project in a much broader endeavor that positions landscape as a lens through which cultural values are transformed. Culture is

thus inclusive of what has been designated as Nature. ‘Nature’, as it is used throughout this thesis signifies the ecological, pastoral, or scenic values placed on the environment), in that all values are human derived. In its truest sense, the landscape project embodies an active engagement in all things human. With an increase in the scope of the landscape project, into the realm of urbanism, infrastructure, politics and planning, from the urban core to industrial corridors at the periphery, to the dissolution of space that is suburban sprawl, comes the development of a new approach to design: *A* (New) *Pattern Language* (Alexander, 1979). The scale of intervention expands from site to region as we begin to examine the underlying currents that drive land development patterns and resource allocation.

Specifically in regards to former industrial sites, the past holds key indicators, or prognosticators of future land use and spatial configuration. Should we reclaim these sites for new industrial uses, only to repeat the same mistakes? Should we reclaim these sites to their highest economic potential? Here at this critical nexus, design disengages from the purely functional stance of modernism, away from the contextual historicism of postmodernism, and distances itself from the self-reflexive aesthetics of the avant-garde towards a relational and synthetic approach to the complexity of contemporary issues. The contradictory nature of many sites, and the demands that are placed on them, both internally fueled and externally driven, provokes a response that questions seemingly limiting conditions, and seeks to resolve disparate circumstances towards a future of shared possibilities and responsibilities. Necessity breeds creative answers. Although not yet a time of crisis, if we fail to answer to current issues that loom larger than site boundaries, we’ll reach a point of contention where through our failure to act, we are

relegated to the role of willing participants in the unraveling of cultural and ecological underpinnings.

The framework within which this approach must develop is what has been termed the post-industrial landscape. This again is more pervasive than the visual connotations of despoiled landscapes and fouled waterways, the root of which a self-evasive, environmentally-aware public has blamed solely on industrialists. By aligning oneself with causes that proffer ecological integrity, cleansing both mind and spirit of past malfeasance, the public lapses into false romantic notions of benevolence toward the natural world. Claiming accolades of stewardship through memberships in NGO's, is a symptom of Western culture's NIMBYism. By focusing on the simulacra of Nature, such as our National Parks, and other picturesque landscapes, we fail to address our own current despoliation of far away places through our reliance on a global economy that places equal value on all things tradable. Protesters denounce the destruction of ancient forests here, but unwittingly support them elsewhere. Commuters protest the new construction of highways within sight of gentrified downtown waterfronts, only to drive in from the suburbs to work and play, but not live. This contradiction in what is said and what is done carries over into the profession through an inability to act as agents of cultural creativity, and an inane ability to do right by the client.

This cynicism does not suggest discounting all socio-environmental efforts as fundamentally flawed. Within the profession, however, (Andropogon, BioHabitats, etc.) and the avant-garde (Schwartz, Walker, etc.). The (art)works of Schwartz and Walker have little to offer in terms of place making, other than the fact that they make the place. Conversely, the argument implicit in the built work of the Natural school fails to address

the complexity of what really is more properly termed a cultural problem, than an ecological problem. Yet, the current condition demands realigning these ideas of Nature and culture, in ways that transcend such divisions. The tension between these apparent oppositions is the fertile ground on which culture may reflect on its own practices, and thus possibly reconnect to the larger systems of which we are a part.

Anne Whiston Spirn (1998), writing in her latest book The Language of Landscape, calls attention to the emergence of "an artful, humanist environmentalism, an antidote to the self-hate that underlies so much environmentalism, its misanthropy" (p. 262). Those involved in the various approaches of landscape recovery exhibit an ability to engage the use of paradox and juxtaposition through mimetic representation, cultural interpretation and tactile actualization of their ideas; thereby evoking consideration of the most critical contemporary issues concerning both the substantive directives and theoretical dialectics of landscape architecture.

Recently, these provocative issues were taken up during a series of conferences held at the University of Pennsylvania, and Architectural Association in London. James Corner and Allan Balfour organized the two events in 1993, and 1994, respectively. Two of the conferences "Constructing Landscape" and "The Recovery of Landscape" lead to a collection of essays entitled Recovering Landscape, edited by James Corner. The other conference, "Transforming Landscape", was also published as a book of the same title.

In detailing the origins of concern that informed much of the discourse Corner (1999) insists, "that the formation of new landscapes was being suppressed by a general enthusiasm, obsession even, with pastoral and historical landscapes" (p. 4). Less a hermeneutics of the current landscape, Corner advocates the necessity of invention, in

what he self-titles an ambitious manifesto for landscape practice. His manifesto is the assemblage of a collective voice that urges the reconsideration of the landscape project "as a means to critically intervene in cultural habit and convention" (Ibid., p. 4). While critical of overreaching self-promotion, the purpose here is to identify, address, and examine the approaches to recovering landscape. The totality of these designers' import will be tested over time. Thus, they remain open to future contributions and informed critique.

This collection of essays stands apart from the current direction of practice, theory and education in landscape architecture. While many in the field are content reiterating the past competencies of the likes of Fredrick Law Olmsted and Ian McHarg, few seem interested in engaging in the critical landscape project of provocation and invention. This project is, as Corner (1999) rightfully suggests, a case where "the parts add up to more than the whole. Like a good landscape, the book is much less a record of past discussions and events than it is an enterprising *project*, searching and suggestive" (p.xi).

Unfortunately, the development of critical thinking in landscape architectural education seems less concerned with redefining landscape architecture as a vital cultural practice. Rather than redefining a common language, curriculum is geared towards the continuance of past methods, technical expertise and memorization at the expense of exploring methodology, theory or expression. In Corner's (1999) estimation, "for landscape to be properly recovered it must be remade, designed, invented anew; it cannot simply be restored, as an old painting" (p. xi).

As alluded to above, the act of recovery begins with the redefinition of terms that enable a meaningful cultural engagement with the landscape. Only by understanding the

common language of reciprocity, can we develop an approach to the larger cultural context in which the landscape project operates. Thus to begin, what do we mean by landscape? The signification of landscape to denote a contrived pictorial view negates the potential for social relevancy. Similarly, landscape as a remnant of nature discrete from human activity disparages both the relevancy of a place within, and a responsibility to design, sustainable environments. Through an emphasis on restoration projects, this current usage of landscape obstructs the more proactive role of engaging in urbanism, infrastructure, and strategic, regional planning in inventive and exploratory ways. As Corner (1999) suggests, "few would share the view that the contemporary metropolis can be construed as a landscape" (p. 2). By limiting definitions, landscape is removed from the political framework within which landscape architecture operates.

These insights into a common language arise from a diversity of sources and may ultimately culminate in what Corner hopes is "the extension and realization of landscape's hidden potential" (p. ix). Many of the essays in Corner's Recovering Landscape, embrace the ambiguity and complexity of opinions, thoughts and conditions that structure the post-industrial landscape. While the center never holds, the authors' collective voice conveys a conviction that the constructedness of landscape is both a source of inspiration and its only savior.

Landscape is thus neither a natural given nor a cultural artifact to be preserved, resurrected, or enshrined. More a cultural way of seeing, landscape has the potential to reconfigure and instill values which otherwise would be stifled in attempts to affix permanence through nostalgic attachments. As a renewed social construction, landscape and its progenitors, enable the exploration and revelation of processes, both cultural and

natural; thereby exposing the false dichotomy between humans and their natural environment. Through examining an approach to design informed by transformation, invention and interpretation of landscape, this thesis seeks to reestablish lost connections, as much as it looks to recover lost spaces.

Less all embracing than the "manifesto quality" of Recovering Landscape, this inquiry, nevertheless, seeks a critical examination of contemporary theory and practice. Rather than mold a complexity of ideas into an affront on the current ideology of landscape, this thesis seeks an approach to critical theory that incorporates dependence on the ecological function of natural systems with the inventiveness of design. Corner's (1999) appraisal of landscape's "capacity to critically engage the metaphysical and political programs that operate in a given society" is valid (p. 1). Yet, this thesis questions whether landscape's eidetic content alone can fundamentally alter our relationship with the natural systems on which we depend. His reliance on the efficacy of representation and eidetic content does not address the fundamental nature of landscape as system, in which tactile and material experience fuses with extraordinarily complex ecological processes. As Anne Spirn (1999) suggests, "the city is not merely a cultural construct for human inhabitation rather it is a complex living landscape" (p. 11).

The remainder of this chapter engages in a critical analysis of Corner's introduction, *Recovering Landscape as a Critical Cultural Practice*. To begin, the revisionist treatment of landscape "as both idea and artifact. In the first case, recollection, in the second, invention", neglects a consideration of landscape as the physical manifestation of complex ecological processes such as succession, weathering, decay, metamorphosis, erosion, reorganization, etc. Corner's (1999) emphasis on the abstract

positions a relationship to landscape on par with that of the observer and observed. By underemphasizing a connection to place or process, this decontextualization of landscape into eidetic content escapes proper reason. Aside from occasional references to the scale and scope of the landscape project, there remains an underlying abandonment of the landscape of inhabited ground, for the landscape of higher minds.

It is difficult to envision Corner's (1999) "the image of inertia" referred to when he compares landscape to "the innovative efficacy surrounding modern-day economics, information, media-technologies, and corporate and political initiatives" (p. 2). One must hope that he is not a proponent for a landscape based on the exigencies of its modern day competitors. However, Corner seems to argue for an approach to landscape that weighs less heavily on phenomenological experience and physicality, and places greater emphasis on intellectual capacity. The extension of landscape into "a synthetic and strategic art form" should expand, rather than limit, the realm of landscape beyond the visionary and ambitious intellect (ibid.). Yet in this synthesis, Corner undervalues comprehensive readings of site conditions and processes, the specificity of place, and the revelation of the inherent intricacies of the existing landscape. This oversight serves as a reminder that the landscape project needs also to recover the hidden aspects of geology, hydrology, and vegetation within the fabric of our failing urban infrastructure. Although these systems are not precluded from Corner's newly inventive and synthetic approach to landscape, the stress is placed elsewhere.

Throughout his introduction, Corner examines the debate dividing culture and nature. While not completely failing to appreciate those who seek to repair anthropogenic damages, he rightly argues that environmentalists are mistaken for "conceiving of the

environment and its many effects and maladies as being outside and not within the cultural world" (p. 4). Corner argues that even after the efforts of restoration projects, many of the cultural attitudes and modes of behavior that first brought about environmental destruction still remain intact. While he does not propose trading one for the other, this author argues that more is needed than the combined individual efforts of the ecologists and those who seek "the cultivation of landscape as an innovative cultural agent" (p. 4). By recognizing not only the constructedness of the world, but also its connectivity, the proactive nature of the recovery and design of actual landscapes mediates between the seemingly insufferable opposition between culture and nature.

Rather than transgressing into the political maneuvering of polemical discourse, practitioners of landscape recovery are engaging in the fusion of dynamic relationships between form and function, composition and structure, instrumentality and materiality, experience and knowledge, theory and practice, the imagined and the real. Such concepts inform one another equally and reciprocally. They do not operate as separate endeavors. To Corner's (1999) credit, the collection of essays provides a significant contribution "with regard to advancing landscape as an innovative practice [in] the significance it attributes to the imaginary in relation to the built. Never is the power of the landscape idea underestimated or severed from physical space" (p. 5). It could be argued however, that the significance he places on eidetic content is often overestimated, even in its actual representation on the ground plane.

In the section, "Landscape Agency", Corner (1999) returns to the notion of landscape and its cultural meanings. This perspective is helpful in reconciling the current division between things as they are and things as they seem to be. By emphasizing the

use of landscape as verb, or as process, one begins to recognize and direct attention to its formative aspects through time. As an evolutionary process design is concerned with the fundamental components of structure as organizers of the whole. Again Corner (1999) points out, “What matters is how the form and geometry of a project make sense with regard to the specific issues it is trying to address and the effects it is trying to precipitate” (p. 4).

Specifically in relation to the case studies here, what is significant is the return to a concern for function, both ecological and programmatic, over purely formal or aesthetic considerations. As will be shown, the “surface” aspects of landscape are manifestations of the “core” (Thayer, 1994). This surficial materialization of the inner mechanisms of landscape processes, both cultural and natural, reconfigures our notions of place and implicates dynamic events and possibilities through time. Only by actively engaging in the process of recovering actual landscapes does this search yield meaning. The emphasis here is on the physical, rather than the ethereal, aspects of landscape. While the latter is necessary to manifest a meaningful conception of the former, it is the material space made and remade that is the concern of this design investigation.

In placing emphasis on the actualization of the landscape project, this response to current trends in theory and practice, attempts to broaden contemporary conceptions of visual, formal, and ecological notions of landscape into a comprehensive whole. The associative properties of each underscore the foundations of our relationship to the whole. Thus, the social and ecological complexity of landscape necessitates a multifaceted vision of the future. This vision, however, places less emphasis on the ideas, or their representation, of an individual designer, and more on the ability to incorporate a

multiplicity of demands in a evocative built expression of latent potential, current needs, and future possibilities.

As Corner (1999) suggests, “the interaction between the built and the imaginary is what lies at the center of landscape architecture’s creativity and contribution to culture” (p. 11). This call for a more proactive role for the landscape architect calls into question the ameliorative professional services provided to disguise the work of developers. He goes further by suggesting this landscape practice acts as a “distancing device… particularly effective in this regard because it so beautifully conceals its artifice, ‘naturalizing’, or rendering invisible its construction and effects in time” (p. 11). Corner’s point is instrumental in identifying the ways in which we assuage our guilt for failing in other respects to shape a satisfying existence. This dilemma marks a significant crossroads at which we can either use landscape to conceal our negligence and abuse, or engage in the larger project of landscape recovery to reveal both our creativity and our social and environmental responsibility.

CHAPTER 3

THE PRAXIS OF RECOVERING LANDSCAPE

prax ' is, *n.* [Mod.L.; Gr. *Praxis,* from *prassien,* to do.]

1. practice (sense 4): distinguished from *theory*.
2. established practice; custom.
3. a set of examples or exercises, as in grammar

- *from* Webster's New Twentieth Century Dictionary

praxis - "…the elaboration of a conceptual process that is inseparable from the actual making of architecture."

- *from* Event Cities, Bernard Tschumi

The topic of landscape recovery has recently received much attention in the *praxis* of landscape architecture. This current reconsideration of the "eidetic content, hermeneutics, and representation" of landscape finds its origins in the ancient dialectic between theory and practice. *Praxis,* as used here, more closely resembles the project of theoretical inquiry and its resultant manifestations in the landscape, rather than the definition given by Webster's. Similar to Bernard Tschumi's positioning of theory as inextricable from the prosaic nature of architectural practice, Corner (1999) seeks a "more actively engaging and interventionist role in the recovery of landscape… [suggesting] that new ambitions, techniques, and desires must guide the education and practice of landscape architects" (p. 15). Multiple views and many voices are participating in the recovery of landscape through a reconsideration of the fundamental issues central to the landscape project that this discourse represents.

These advocates assert the necessity of placing invention above historic interpretation or ecological restoration. This collective voice calls for the metamorphosis of the landscape project as a means to critically intervene in cultural habit and convention. However, by reproaching "those who are preoccupied with historical description, informational analysis, or consumerist development of land", Corner (1999) misses the target by condemning the victim for the crime (p. 12). The misalignment of contemporary forces resulting in irrelevant and debasing landscapes perhaps has more to do with the political and cultural landscape that Corner seeks to influence. Specialization and a consumer-based economy limit the ability of practicing landscape architects to advocate for alternative social constructions of landscape. Moreover, it is likely that not all professional landscape architects would accept roles as agents of cultural change. Corner's (1999) proposition does however direct those wishing to find a way through the darkness "toward newly relevant and life-enriching ends" (p. 20). His suggestion that only a few are engaged in the critical landscape project of provocation and invention places the "onus... on those who practice in topographical affairs to seize the opportunity and place landscape squarely in the foreground of cultural and political life" (p.19).

In his introduction Corner (1999) attempts "to stimulate the current resurgence of interest … not [in] the landscape of scenes and objects but [in] the landscape of ideas, operations and synthetic strategies… [where] the focus is on what the landscape *does*, as in its efficacy and scope of influence" (p.14). Offering a vision that disavows notions of landscape as contrived pictorial views, the project of landscape recovery increases the potential for social relevancy. In particular, conceptual frameworks from two case studies are identified and examined here. These approaches to recovering landscape are utilized

to 1) depict the design process that directs this thesis and, 2) describe a typology within which the design application of transforming a lost space into an urban park takes place.

"THE AMSTERDAM BOS: THE MODERN PUBLIC PARK AND THE CONSTRUCTION OF COLLECTIVE EXPERIENCE"

While public parks were initially conceived in the late nineteenth-century as places of refuge from worsening urban conditions, the Bos Park, an 875-hectare forest-park built in Amsterdam between 1929 and the 1950's, represents a departure from this disjunction between realities. The Bos, designed by architect Cornelis Van Eesteren and landscape architect Jacopa Mulder, was transformed according to the bio-physical (material) processes of landscapes, rather than as an aestheticized object. Thus, according to Anita Berrizbeita (1999), the design of the park, or the process of its own production, is made "explicitly visible in its physical form, connecting it to the processes of the industrialized city around it" (p. 188). Although the landscape elements, such as forest, open space and water courses, are transfigured across the site in a "spatial structure that is nonhierarchical, open-ended, and reiterative", there is an inherent logic to the systematic ordering of productive entities (p. 191). Through the conceptualization of a series of rational design and construction methods, such as drainage and industrial forestry practices based on natural succession, the site is staged as an on-going project of land reclamation that is made open and accessible to the public.

Trees species of two forest types were randomly distributed in a grid pattern in the areas designated as woodlands. Pioneer species were utilized to facilitate drainage of the site through evapotranspiration as well as to provide shade for the mature forest species during the first years of their development. The pioneer forest was cleared after fifteen

years with the exception of the alders which were pollarded to provided shade patterns on the forest floor, thus minimizing the success of understory volunteer seedlings. This construction of the forest was based on the functional and structural requirements of establishing a self-sustaining system while also acting as a catalyst for the massive operation of draining the soils. Thus, multiple benefits were achieved through site engineering techniques that approached problems systematically, rather than singularly. Landscape is conceived of as process rather than object, with its narrative located "in the nexus of relationships that derive from the process system of production". Berrizbeita provides five formal insights into this design process that shifts from "object-as-representation to object-as-system-of-production" (p. 194). *Loss of form. Multiple meanings. Anti-aesthetic.Reciprocity of Park and City.* and *Index.*

The *loss of form* referred to is more specifically a loss of hierarchy. The distribution and superimposition of systems contribute equally to a non-linear experience of the park. There is no center. Space and mass overlap and intersect each other. Further, the resultant shift from landscape as representation to landscape as system manifests *multiple meanings* through an "absence of spatial narratives" (p. 194). The park is not laid out to be experienced in any particular order. Through the reciprocity between site and user, the park accrues successive layers of meanings over time dependent upon the experience of site processes and user needs. As such, the park is not preconceived as possessing aesthetic value. Rather, "the park asks to be understood as a transcription into form of a program that has been determined according to a set of scientific and social criteria" (p. 195). This *anti-aesthetic* reflects the nature of the park's utilitarian relationship of its own productive capacities with those of the city. This *reciprocity of*

park and city is reflected in the multiple functions and activities that mirror a similar instrumental ordering of the city's infrastructure. Finally, as an *index*, the park acts self-reflexively, referencing the traces of its own production. Active engagement in the landscape is thus determined by understanding the park as a working system of site processes, not as a fixed composition of static elements.

"FOUR TRACE CONCEPTS IN LANDSCAPE ARCHITECTURE"

Surveying the scene in France, Christophe Girot (1999) examines the etymology of the French word for landscape, *paysage*. Girot tells us that the French words *pays and paysage* "convey an aesthetic and experiential dimension that does not pertain in the English vocabulary" (p. 59). In his view, despite the implicit notion of "cultural belonging" the current focus in France is on environmental conservation and restoration. While this concern for ameliorating the impacts of urbanization takes into account people's relation and care for the land, Girot sets his sites on the "imaginative horizons" of a "broader practice of landscape". His interests are in heightening perceptions and reactivating awareness through a design process reliant upon experiential site investigations. Guiding his exploration of specific sites is a conceptual framework of four operating directives, what he terms "trace concepts : landing, grounding, finding and founding". Unfortunately for the reader, one is not directed toward the etymology of their French equivalents. Thus, in the interest of depicting the design approach utilized in this thesis, it will be helpful to uncover the meanings behind Girot's concepts.

The term "landing" implies discovery. This is the moment when one sees the site for the first time, an instance of sensual freedom and multiple possibilities. First

impressions occur here in the absence of critical analysis. Girot quotes the author Francois Beguin to describe the innocence of the encounter, “The exit from the humanized world, whether voluntary or involuntary, enables the recovery of vital forces led astray or left dormant by society” (p. 61). The act of landing requires one’s mind to remain open, whilst preconceived notions fall away and dissolve into a mix of “wonderment and curiosity”. This initial stage is critical to the design exercise of recovering landscapes in that preserving, restoring or creating the existential requires a keen sense of appreciating and handling the existing.

The process of “grounding” furthers the initial understanding gained from beholding the site for the first time. Establishing a sense of orientation is implicit in this notion of deepening an understanding of the site. While the occasion of grounding occurs but once, the inquiry and analysis that accompany careful study and observation of a site’s processes are ongoing, more methodical, and more solidly based in the physical realities of existing conditions than in the creative imagination of the designer. However, as Girot clarifies, “sometimes the most important aspect of a given site is almost intangible. It is not necessarily what remains visible to the eye that matters most, but those forces and events that undergird the evolution of a place” (p. 63). Thus, investigation extends beyond site boundaries and beneath surfaces in order to uncover the successive layers of history.

Often times, that which lies beneath, or beyond, provides the basis of a series of “finding(s)”. This process is inclusive of both the objective and the subjective aspects of observations. The found object, or idea, and the act of finding are different sides of the same coin. Often that which is found is an idea, or a discussion, that embodies the spirit

of the place. Other times the found object embodies the essence of the place and will be left to signify an event, a person or an idea associated with the place. The object depicts a story that will be told well into the future, and offers a symbol of remembrance that defies design intent. Differing from grounding, and the last concept “founding”, which are typically within the realm of designers, finding occurs continuously by those who reclaim the site as their own. Finding is thus a narrative of the site, an on-going dialogue between those who have inhabited a place, the place itself and those that will inevitably recreate their own interpretations. As Girot concludes, “what is found is an open question, an open possibility” (p. 64).

Finally, “founding” represents the synthesis of the preceding trace concepts. This act manifests the designer’s intent, whether based conservatively on past import, or radically in opposition to, or in contrast with, the larger context in which it is set. Typically, in design, the act of founding is equated with redirecting the use of a site. Yet, every site exists as a multi-layered agglomerate of past, present, and future “foundings”, that correspond to events, both cultural and natural. In the end though, the designer’s approach must unequivocally interject meaning and relevancy into the discourse of a site’s stance toward the future. The last of Girot’s trace concepts reconsiders the relationship between the design process and the cultural climate in which it unfolds. Rather than being “reduced to systematic and quantitative formulas for analyzing the site from a distance…. trace concepts enable designers to come to grips with their intuitions and experiences of place”, thus providing direction for a project’s development (p. 65).

As such, this thesis’ design approach expands its scope beyond the mere corrective actions currently employed on-site toward a more encompassing socio-natural

perspective that encourages engagement, inquiry, adaptive reuse, recreation and regeneration. The consideration of site reclamation and construction techniques such as phytoremediation, and old-field successional management are used as much for their ameliorative capacities as their revelatory potential. However similar to recent projects that seek to reveal natural processes, this approach also attempts to reveal the past in such ways that enable a more diverse set of possibilities for the future reconciliation of cultural ways of knowing and being with ecological understanding. While cultural activities have shaped our definition of "Nature", the future of urban parks may represent a cultural locus for observing, monitoring and engaging in the practice of post-industrial ecology. As such, the transfigured post-industrial condition is seen as an experimental testing ground. This new urban park morphology juxtaposes the staging of events and programs against such processes as the dynamic growth patterns of successional vegetation within an overall framework ordered by the instrumental logic of site remediation technologies.

CHAPTER 5

SITE HISTORY : PROGRAM + DESIGN DEVELOPMENT :

MANAGEMENT GOALS

"The investigation of a specific site is a matter of extracting concepts out of existing sense-data through direct perceptions… One does not impose, but rather expose the site" (Smithson, 1979)

"These postcards of landscapes that do not exist …

SITE HISTORY

The 50-acre site of this study is an industrial corridor located east of downtown Athens, between Foundry Street and Willow Street, and between Broad Street and North Avenue (see location photograph, **Figure 4.0**). There are multiple property owners on the site, including the City of Athens, former incinerator operators; Athens, Inc., multi-family housing developer; Atlanta Gas Light Company, former manufactured gas plant (MGP); Georgia Power, former MGP; E. Clay Bryant and C. Broun Conway, owners of the warehouses formerly occupied by the Webb Crawford Co., Wholesale Gro., Armour & Co., Empire Beverage Co. in 1918, Central of Georgia Railroad Freight Depot in 1918, and the Athens Foundry and Machine Works. The remaining brick warehouses that form the western edge of the study site are identified in the 1988 National Register of Historic Places nomination as “Athens Warehouse Historic District” (Menakanit, 1991). The study site adjoins both the historic central business district of downtown Athens, to the west, and the Oconee River, to the east.

However, the recently constructed Athens Banner-Herald Newspaper Building and the Classic City Civic Center, between Thomas Street and Foundry Street, severs downtown from the study site and Oconee River. Thus, the physical and psychological constructs of both the river and the study site suffer from their apparent obscurity and dislocation from downtown. Historically, this has not always been the case. Before the University of Georgia rose to prominence as the economic driving force of the city, the prosperity of Athens was synonymous with the Georgia Railroad that at one time bisected the site. With the construction of the Trail Creek and Oconee River railroad trestles in

1883, the Georgia Railroad connected downtown Athens to the study site and beyond, via a network of rail transportation on which the city's future development would depend.

Historical documentation indicates that the industrial development of this area coincided with the construction of the railroad. As early as 1852, the Athens Gas Works occupied an area of the site producing gas from pinewood. Since then, ownership of the facilities was transferred several times resulting in the transformation of the gas manufacturing process. By 1981, there were no longer any aboveground structures associated with the former MGP's. This portion of the study site owned by Atlanta Gas Light Company and Georgia Power is currently being treated "to address the remediation of environmental impacts [to soil and groundwater] associated with [the] former manufactured gas plant" (ThermoRetec, 2000).

Contaminated soils are being excavated and treated for off-site landfill disposal, while groundwater is being monitored to "evaluate the impact of source removal of constituents of interest (COI) in groundwater and measure natural attenuation parameters for use as a groundwater remediation technique" (ibid.). Portions of the 1.9-mile section of line officially abandoned by CSX Transportation in 1998 were removed prior to soil excavation. Similarly, vegetation throughout the contaminated site has been cleared. The corrective action plan currently being implemented recommends re-grading clean backfill and over-seeding with Bermuda grass as the restoration strategy. In contrast, this thesis advances a plan that utilizes phytoremediation and secondary successional revegetation techniques for restoring ecological health to portions of the study site. The contamination of much of the site will determine where the initial restoration efforts are focused.

Through its instrumental role in the design process, the process of phytoremediation becomes an *index* for the recovery of the landscape. The emphasis of this aspect of the design approach is on the interaction between technologies of remediation and their resultant formal design implications. The plants themselves signify the cleansing of the soil. Thus, plants are chosen not only for their properties as hyperaccumulators, but also for their visual qualities of bold form, size, color and texture. The reason for this is two-fold. Typically, plants with greater biomass have greater potential to extract heavy metal contaminants from soil. Secondly, the graphic display of large patches of color will provide a field of contemplation for those experiencing the park. Within the contaminated sections of the study site, principles of biochemistry are grafted with selected plant morphologies into a hybrid landscape experience. Beyond these experimental remediation gardens, the task of redefining an interface with downtown drives the redesign of other areas within the study site.

With the recent abandonment of the rail-lines by CSX Railroads and their subsequent removal by Georgia Power, this site continues to lose contact with the events that helped to define its relationship to the city. Unfortunately, according to local politician Carl Jordan, through the senseless destruction of these trestles, “Athens has not only lost another link to its past, but has also obliterated a transportation path for its future” (www.bikeathens.com/ transport/railtrail/trestlehistory.html). In response to this current condition and in conjunction with community interest, this plan projects the extension of the Athens Rail Trail Corridor through the site, thus further enabling the reinhabitation of the site. The redesign of the trestles is seen as an opportunity, not a constraint. Different from approaching capital improvement projects as narrowly defined

technical operations, the directives of the rails-to-trails program are multi-dimensional and extend the connective tissue of design beyond site boundaries. As part of a larger regional multi-modal transportation effort, the reconstruction of the trestles broadens the possibilities of the city's proposed infrastructure improvements for the study site.

The proposed SPLOST (Special Purpose Local Option Sales Tax) project for a multi-modal transportation center and Classic Center parking garage will be located on the southwest section of the study site, at the corner of Broad Street and Foundry Street. This facility will be utilized by city and university bus services, taxis, airport shuttles, limousine services, pedestrians and cyclists; improve ride share opportunities; and contribute to the possibility of a commuter rail to and from Atlanta. The preliminary program for facilities include a public plaza, café, kitchen, dining area, restrooms, waiting area, gift shop, information center, parking, drop-off zone, bus bays platforms, car rental space, management offices, lockers, mechanical and electrical service areas (www.athensclarkecounty.com/splost/splost4/project21.htm). This thesis incorporates the SPLOST proposal with minor adjustments in order to better define its connection to both downtown and the proposed park.

Finally, this study proposes residential and adjunct research facilities for the University of Georgia's future College of the Environment. The location of a center for ecological field studies would enable the long-term management goals of this experimental design to be sustained. Restructuring of the site would allow continuous observation of changes to the landscape and provide the necessary oversight for adaptive management to occur.

The buildings would be sited where the former baseball bat factory was located along the CSX railroad corridor. This utilitarian justification of adaptive reuse of the railroad's right-of-way recalls the former uses of this industrial corridor. There is also a practical, site engineering reason for rebuilding on the exact locations of former buildings. The buildings will act as a cap and cover procedure, and therefore it will not be necessary to bring the level of contamination to near pristine levels. However, the exterior spaces will be continually monitored and acceptable residential levels of contamination will be achieved over time, allowing the eventual planting of orchards and gardens.

The surrounding site would provide opportunities for future experimentation and could be adapted to respond to the evolution of research interests. Further, the presence of students and faculty would facilitate interpretation of the dynamics of landscape transformation to the public and encourage their participation in the site's renewal. Thus the site, also being adjacent to the Oconee River Greenway, a recreational and wildlife corridor, would establish a framework of physical connections between cultural activities site dynamics, and larger scale ecological processes.

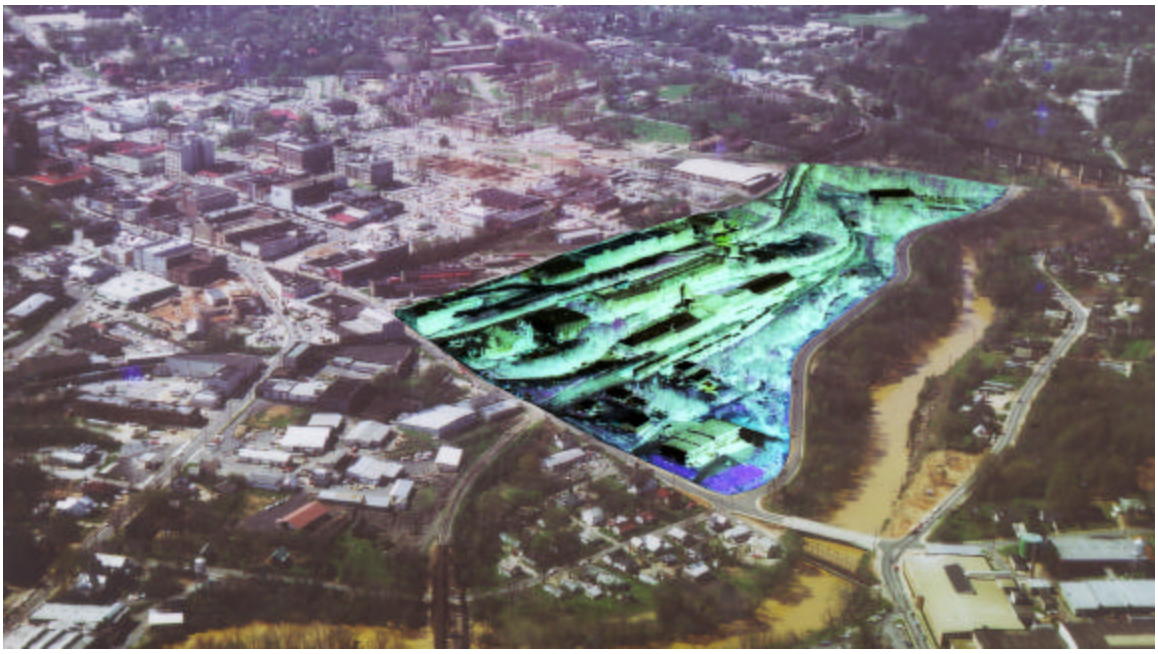
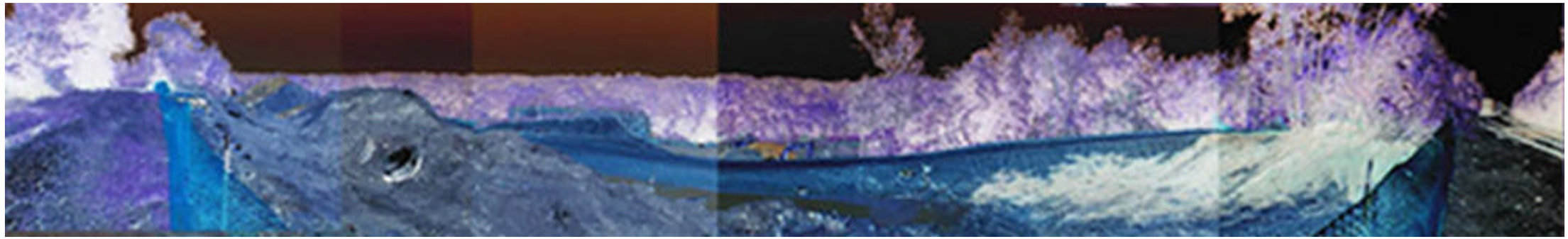


Figure 4.0 – Study Site Aerial Photograph, 1977



… observed from unusual viewpoints or shown in unreal light …

… were created simply for the pleasure of being looked at …

Figure 4.1 – Historical Site Analysis

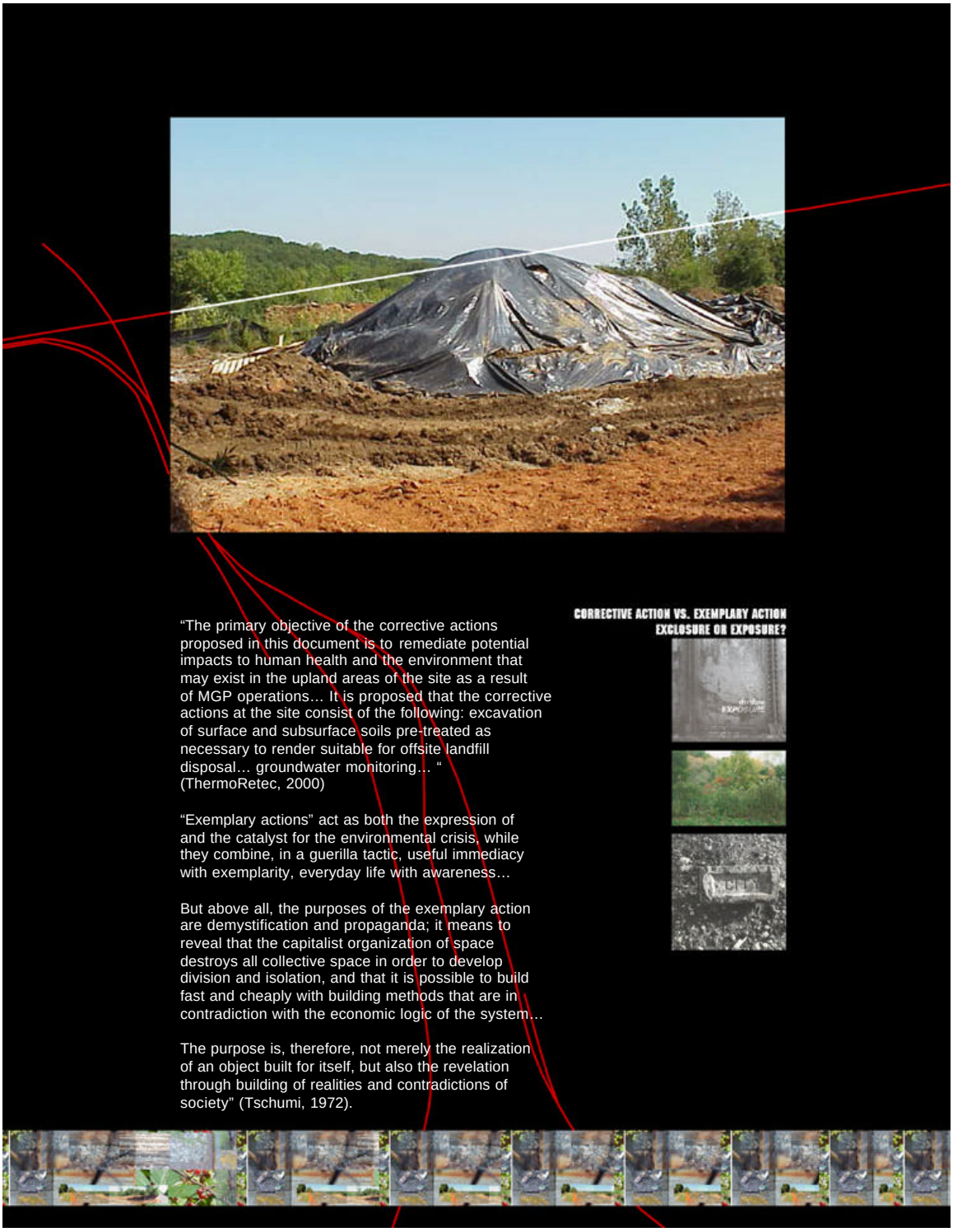


Figure 4.2 – Exclosure or Exposure?

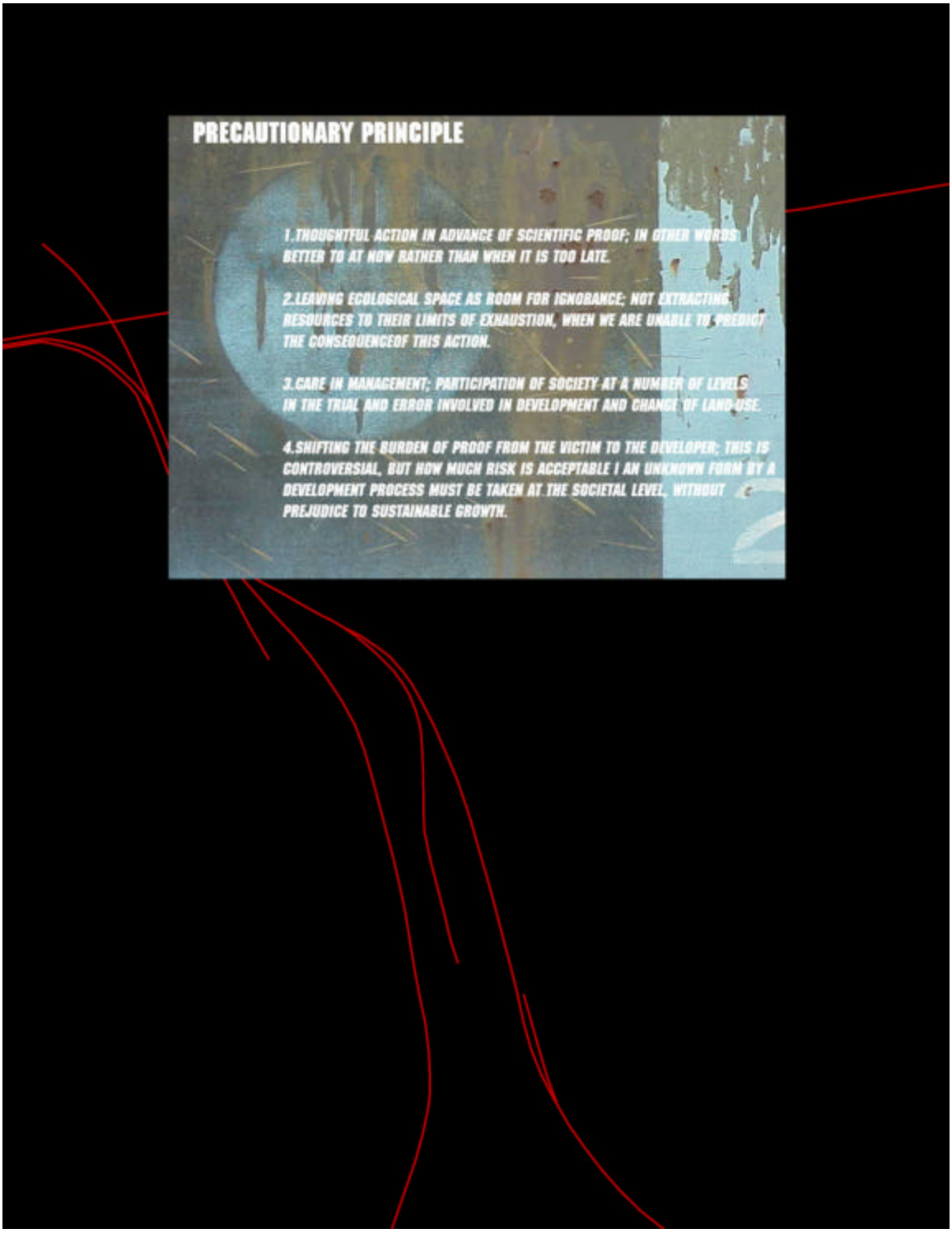


Figure 4.3 – The Precautionary Principle

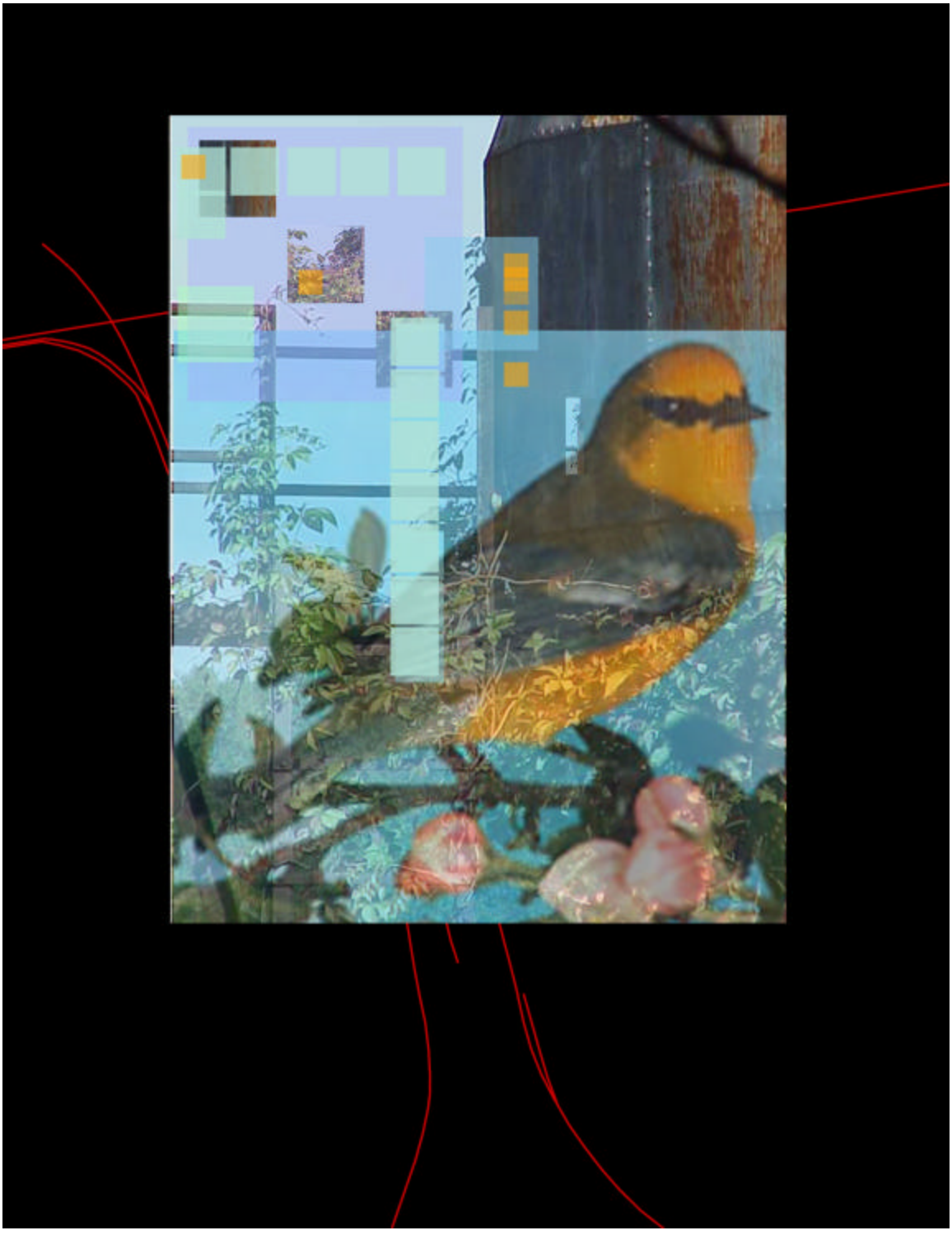


Figure 4.4 – Design + Ecology + Industry

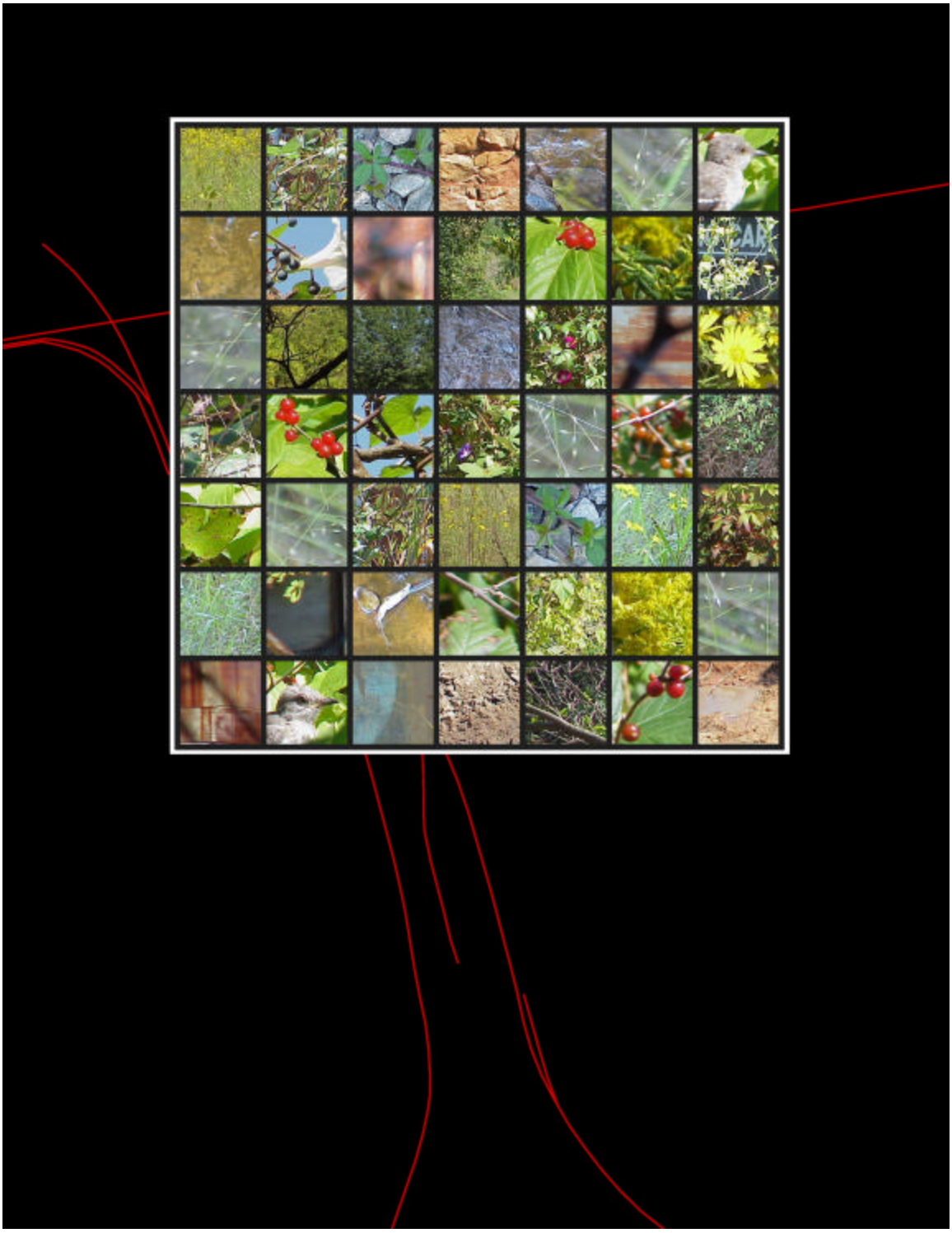
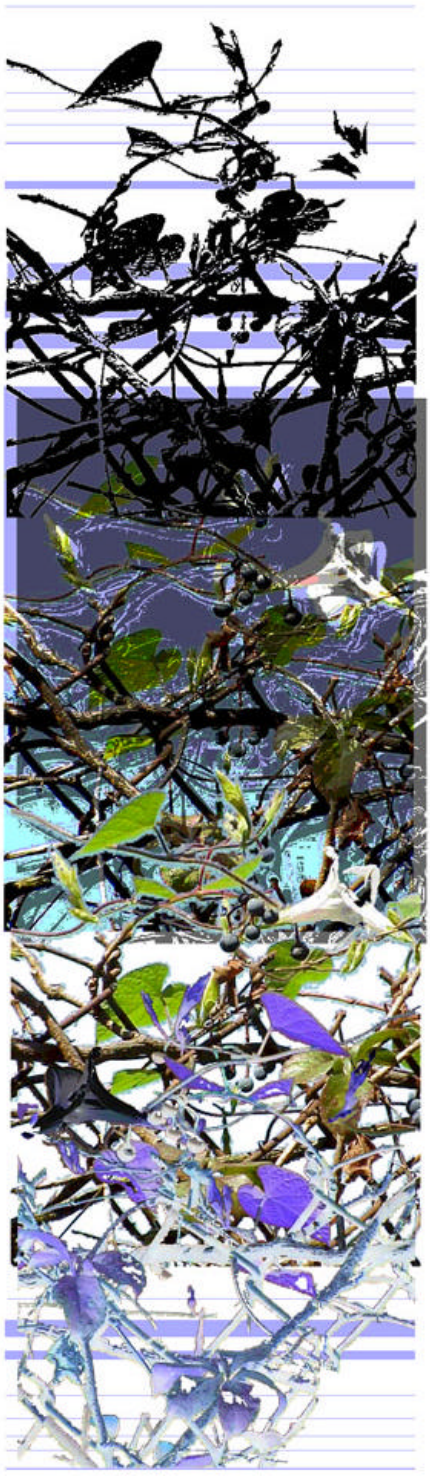


Figure 4.5 – Existing Patterns Of Vegetation + Remediation Gardens Of Juxtaposition



… as though they picture authentic memories - Miquel Vidal Pla, from Transformed Places

PROGRAM DEVELOPMENT

Within the context of a former industrial corridor, the combination of a systems-based approach for ecological renewal and cultural activity forms an urban park typology that encourages a complex reordering of place, in favor of the efficient, or expedient utilization of space. Rather than attempt to predetermine a set of activities and their associated spatial requirements, the design program is understood to be “a series of conceptual strategies aimed at establishing conditions for new urban [and ecological] events” (Tschumi, p. 11). Similar to ecological landscapes, this experiential and experimental landscape will be subject to alterations in structure and function over time, determined as much by the cultural activities that develop as the natural processes that reorganize the place. Less definitive than a master plan, this design strategy synthesizes disparate activities through a choreography that expects the unexpected. The non-linear dynamic processes of this post-industrial landscape are ordered in a framework borrowed from the elements of landscape ecology: *patches, edges, corridors, matrices and mosaics.*

Patches are delineated as “exclosures”, or areas in which the non-linear processes of remediation and successional revegetation are encouraged. *Edges* are the loci of confrontation and juxtaposition, yet establish the grounds for reconciliation. Edge conditions encourage the interaction between the unlike realities of the post-industrial ecology. The existing ecologies of disturbance meet the restored, idyllic habitat patches of the “exclosures”. Different user groups also interact within shared spaces of overlapping programs. These open spaces are primarily found within the linear parks, or corridors, that simultaneously accept multiple uses and exhibit diverse conditions. These *corridors* establish the inter-relationships of movement and connection along existing

right-of-ways, as well as on newly defined pathways throughout the site. The preservation of the existing *matrices* of disturbance, including the ruins of exposed infrastructure, provides an historical vantage point for the continued development and transformation of future activities and conditions. As a referential starting point, the historical narratives of the site establish a pattern of redevelopment, yet still accommodate future needs and events. A shifting *mosaic* is thus established by the dynamics of overlapping and interconnected systems of organization, circulation, and regeneration that will develop through time. Therefore, the current design expressions purposely remain elastic, open-ended, and often impermanent, as is the case with the remediation gardens.

While providing flexibility for future decision-making, the immediate, and often invisible, legacy of the industrial past drives the re-creation of the landscape. The site is initially structured around an experimental field "laboratory" for the methods of phytoremediation, soil mounding, and other forms of bioremediation of soil and groundwater. The original configurations are likely to evolve through time. With the annual harvesting of grasses and forbs and the eventual clearing of temporary poplar and pine groves, the design is based in the instrumental act of reclaiming the ground.

However, rather than excavate the surface and conceal the evidence, remnant traces of past uses are recalled, interpreted, and open to the public. The visual display of color and texture within the remediation gardens serves as an allusion to the invisible traces of industry. The railroad lines and connecting trestles are reconstructed, forming a linear edge along the remediation corridors. Rails are also used to form the borders of the remediation gardens. These industrial markers are found objects that encourage visitors to

revisit the site's history, while interpreting the act of phytoremediation. Given that what we are able to see represents but a fraction of the underlying complexity of biological systems, there is no suggestion of the gardens' inherent "eco-revelatory" potential. In fact, the design intent is not to reveal the mechanisms behind phytoremediation, but is instead explicit in making the act of remediation a highly visible, accessible, engaging and participatory part of reclaiming public space. By clearly demarcating the remediation "exclosures", maximum exposure is achieved.

This design is an attempt to express what Bernard Tschumi (1997) defines as "praxis", or the "elaboration of a conceptual process that is inseparable from the actual making of architecture [or landscape]" (p. 11). The creative process entails simultaneous considerations of the tangible and intangible, the visible and the invisible, the real and the imagined. While their concurrence in built form is next to impossible, design seeks their reconciliation. In the following sections, the intersection of form and function is considered as a key determinant in meeting the program requirements of the proposed design.

POINTS : LINES : GRIDS

Relating his definition of "praxis" to the shaping of programmatic requirements, Bernard Tschumi (1997) describes an approach to design that involves "promiscuous collisions of programs and spaces, in which the terms intermingle, combine and implicate one another in the production of a new architectural reality" (p. 13). Throughout the design development stage of this thesis, emphasis is placed on the synergy between theory and application. The establishment of geometry of points:lines:grids, based on the elements of landscape ecology, acts as markers of change, while the natural growth

patterns of successional and remediative vegetation provide an *index* of the site's recovery.

OVERVIEW OF SITE CHARACTERISTICS

The study site is situated within the Midland Slope of the Piedmont physiographic province. This area's geology is characterized by faulted metamorphosed rocks and deeply eroded plateaus. The igneous (mostly granitic gneiss) and metamorphic rock underlying the area are overlain by a combination of regolith of weathered soils. The majority of the soil on site consists of fill material such as sand, silt, clay, fragments of brick and glass, gravel, slag and ash, coal fines and fragments and gravel. These are all remnants of former construction processes on site. The depth of fill ranges from zero to twenty-six feet below ground surface. There is an unconsolidated layer of mixed soils containing clay, silt and sand below the layer of fill that is generally uniform across the study site. These soils are the by-products of *in situ* chemical and physical weathering of bedrock and range from zero to twenty-nine feet below, averaging five feet in depth. The igneous bedrock, consisting of medium-to-coarse grained granitic gneiss that lies beneath the overlaying regolith and fill material begins at depths ranging from one and a half to twenty-nine feet below the ground surface.

Groundwater is the major component of the site's hydrology. Within the Piedmont province, groundwater typically occupies the joints fractures of the regolith and bedrock formations. On-site, groundwater also occupies the fill material in an area down slope from the two former tar wells. Depth to groundwater on the study site ranges from seven feet to thirty-four feet below ground surface. The major direction of groundwater

and surface runoff is northeast toward the Oconee River. Beyond runoff, there are no surface water channels or streams on site.

The major vegetation patterns on the study site are characteristic of disturbed industrial corridors. There are a series of hedgerows, ranging from ten to thirty feet in width along terrace edges. These hedgerows have a continuous tree canopy and shrub layer, in addition to a mixed grass and forb edge condition. Typical species are listed below.

MAKING THE INVISIBLE VISIBLE

1.0 - Gardens of juxtaposition

Phytoremediation is the use of a plant-based system for cleaning contaminated soil and groundwater. Capitalizing on the synergistic relationships between plants, micro-organisms, water, and soil that have evolved over millions of years, phytoremediation is a new technology for addressing a wide array of contaminants. Although the exact mechanisms involved are still being discovered, the fundamental physiological processes of phytoremediation are widely understood.

Physically, plants limit the transport of contaminants by adsorbing compounds to their roots, increasing the rate of evapotranspiration and reducing runoff. Plants also stimulate the microbial transformation of contaminants by introducing exudates and leachates into the soil, and by contributing to the fluctuation of oxygen in the rhizosphere. As hosts to a variety of microorganisms, plants provide both the physical habitat and the chemical building blocks needed to biodegrade contaminants. Some plants are even capable of uptake and subsequent metabolization by increasing the enzymatic processes that enable them to break down the organic compounds they encounter. Others, known

as hyperaccumulators, are able to store heavy metals, inorganics and organic pollutants.

The use of phytoremediation is being proposed here as an alternative to the established corrective action (ThermoRetec, 2000) of soil excavation and landfill disposal. Where contaminants are susceptible to transport from soil disturbance, they shall be left in place and the existing vegetation is maintained. Soil amendments shall be added to encourage microbial activity in the rhizosphere and the subsequent biodegradation of organic contaminants. Where heavy metals are present in such soils, supplemental planting shall be considered as an additional remediation alternative. On-going monitoring will determine the effectiveness of natural attenuation.

However, where soils may be moved without further risk of exposure, they shall be excavated to the appropriate depth of contamination and translocated to one of the six proposed experimental remediation gardens. These e*x situ* remediation gardens shall be organized according to contamination type. The layout of these gardens in grid patterns will facilitate the monitoring, testing, and ongoing redesign of individual plots.
The volumes of contaminated soil would determine the overall dimension of each of the six gardens for each of the following categories: PAH's, heavy metals, and volatiles.

The first two gardens, designated to remove PAH's, shall be subdivided into experimental plots measuring 10' x 10', which shall be subdivided into (9) 3' x 3' areas, for monitoring purposes **(see Figure 4.6)**. Each of the plots shall be planted with a single native grass, or forb species. The particular species would be selected for their tolerance of local conditions, known presence in disturbed areas, and ability to aid in the degradation of PAH's. They would be tested and monitored for their success in removing contaminants.

Each species shall be randomly distributed across the grid. The patterned mosaic that would form would evolve according to successes and failures, season and rotational schedules, and the types of PAH contaminated soil brought in for treatment

The second set of gardens, designated for the extraction of heavy metals, shall be enclosed in three greenhouse structures **(see Figure 4.7)**. Again, their size and configuration would ultimately depend on the volume of contaminated soil and the chosen experimental design method. The enclosed greenhouses protect against bioaccumulation in the food chain and allow experimentation to continue through winter months. Since corn and sunflowers shall be the primary species for extracting heavy metals from the soil, the greenhouses will reduce the opportunity for uptake into the environment by foraging birds.

The third set of gardens, designated for the removal of volatiles and semi-volatiles, is laid out in a two-tiered point grid system of hybrid poplar and pine trees **(see Figure 4.8)**. The ground plane shall initially be a three-meter square mosaic of alfalfa plots, decomposed granite, and exposed soil where pine leaf litter shall be allowed to collect. Pea partridge shall be substituted as the groundcover when the tulip and pines shade out the alfalfa. Alfalfa may increase the recovery of volatile organic compounds from contaminated soils, and is used here to evaluate its potential for success (Ferro, et al., 1997).

1.1 – Successional exclosures + ecology of disturbance

The complexities of native plant communities require a systematic approach to replanting and encouraging the reestablishment of indigenous vegetation. The successful

restoration of viable plant communities requires more than the simple act of planting native species and letting nature take its course. This hands-off approach typically fails, especially in heavily disturbed sites that remain subject to external threats, such as an abundance of opportunistic exotic species. The following plant species, characteristic of disturbance regimes, are a representative but not exhaustive list of the existing successional vegetation patterns found on the study site:

Foxtail bristlegrass (*Setaria italica*)	Introduced
Elliott's bentgrass (*Agrostis elliottiana*)	Native
Morrow's honeysuckle (*Lonicera morowii*)	Invasive exotic
Johnson's grass (*Sorghum halepense*)	Invasive exotic
Horseweed (*Conyza canadensis*)	Invasive native
Broomsedge (*Andropogon virginicus*)	Native
Camphorweed (*Heterophyca subaxillaris*)	Native
Goldenrod (*Solidago spp.*)	Native
Aster (*Aster spp.*)	Native
Crabgrass (*Digitaria spp.)*	Native
Narrowleaf plantain (*Plantago lanceolata*)	Invasive exotic
Japanese honeysuckle (*Lonicera japonica)*	Invasive exotic
Blackberry (*Rubus spp.*)	Native
Poor joe (*Diodia teres*)	Native
Ragweed (*Ambrosia artmesiafolia*)	Native
Verbena (*Verbena rigida*)	Introduced
Paspalum (*Paspalum floridanum*)	Native
Smooth sumac (*Rhus glabra*)	Native
Nut sedge (*Carex castanea*)	Native

While the above list provides a glimpse into the natural processes of regeneration already occurring on site, the following objectives support the goal of accelerating the restoration project:

1) Restore native plant communities, such as grasslands, shrublands, wet meadows, upland and bottomland forests, that are characteristic of the continuum of old-field succession, typical of disturbed sites.
2) Mimic the vegetative structural characteristics that associated wildlife are dependent upon.
3) Design a system of monitoring plots, i.e. measurable units, that are identifiable and accessible for future study and comparative analysis as biodiversity indicators for urban parks.

To achieve the above objectives, the following strategies shall provide guidelines for restoring both the structural characteristics and the compositional elements of the successional seres of the Georgia Piedmont to the study site:

1) Observe existing patterns of regeneration
2) Mimic the planting patterns found in naturally-evolving landscapes
3) Begin with small-scale experimental exclosures; expect failure
4) Reexamine the goal to revegetate areas that are recovering on their own
5) Monitor and record changes and responses over time

Restoration ecology is an inexact science that involves multiple interventions at a variety of spatial and temporal scales. Thus, these initial steps are points of beginning that will require field adjustments according to variations in local conditions; as well as continual refinements according to observable results. The following actions are prerequisites to establishing a rotational old-field succession regime on this site:

1) Stabilization and restoration of the soil as a living system
2) Control and removal of invasive-exotics
3) Planting and facilitation of the re-establishment of native species
4) Adaptive management and monitoring

A grid of decomposed granite pathways designates a system of four one-meter square annual rotational quadrats, for monitoring species composition, percentage cover, and the presence of invasive exotics. Within the context of an urban park, these markers provide a visual cue to the ongoing site investigations. As such, the restoration project is designed as an experiment to be engaged in by the users of the park. Units are divided into planar, linear, and punctual elements (grid/lines/points) to organize both the collection of data and the movement through the park. In addition to responding to functional requirements, the artificial geometry is utilized as a forced opposition against the natural patterns of successional growth.

1.2 – Non-linear points on the surface

The groundwater monitoring wells, as determined by ThermoRetec (2000), are integrated into the site design by marking their locations with 15’ tall x 6” diameter yellow painted poles. Distributed randomly across the site, they represent the boundlessness of groundwater and the non-linearity of the hydrologic cycle. This point system overlay accidentally coincides with the circulation system in places, whilst remaining isolated elements that collide with the surfaces of the other landscape elements.

1.3 – Lines

The stormwater system of rills and gardens is conceived as a series of corridors, or networks of conveyance through the park **(see Figure 4.9)**. Connected both functionally and visually, these exposed aboveground constructions remain tightly confined in utilitarian engineered structures that typically convey water beneath the urban surface. Concrete rills and culverts are inscribed perpendicular to the contours, across the tightly bound terraces of the site. This system of conveyance empties regularly into the rectilinear stormwater collecting ponds and water gardens that define the elevation change between the terraces. These gardens, constructed of concrete basins, vary in size and elevation themselves as well as in the plant material that helps to purify the water as it rests for a moment before again moving downhill.

These gardens represent only one possibility in the expression of the invisible forces of ecology. They reveal very little. However, they make visible elements that are typically disregarded in the landscape. Their interpretation is left open and will change according to the time periods in which they are experienced. Some users will visit when

they are empty from drought, others will witness the spectacle of torrents of water overflowing the tops of the tanks after a storm surge. Both of these episodes act as disturbances that change the field of events and interactions between the site and its inhabitants. Others will experience a state of “equilibrium” in their daily activities of living on the site. Accordingly, perceptions of the site will vary with time and personal engagement in the landscape.

COLLEGE OF THE ENVIRONMENT

2.0 - The Inhabited Landscape

While the design of the adjunct classroom and laboratory buildings is beyond the scope of this study, they represent an integral aspect of the reinhabitation of this landscape. Rather than a single structure, they are a collection of smaller modules that can be added onto in the future, or easily reconfigured to meet changing needs. The six 2500 sq. ft. residential buildings are parallel to the terraces, and form the *edges* of the “campus”. The buildings are connected within a *matrix* of courtyards, plazas, and small gardening plots by a network of circulation paths, or *corridors*.

THE PAST MEETS THE FUTURE

3.0 - Multi-Modal Station

The proposed SPLOST multi-modal station and parking garage are integrated into the park. The infrastructure of the “open space” is reconfigured to allow flexibility for cultural events, such as farmer markets, festivals, and concerts, to take place. The ground

plane is engineered to receive temporary structures, provide electrical hookups, and to be easily adapted to meet the needs of different user groups.

The station is conceived in broader terms as a multi-functional event space where programs intersect and overlap. The public plaza areas are zones of activity supporting both passive and active recreation. A linear hardscape park along the entire length of the parking garage, for basketball, handball, skateboarding, chess, etc., takes advantage of thirty-foot setback from Foundry Street. While providing drop-off and hangout zones during the day, gathering areas are delineated for events at the Classic Center. An adaptation of the abandoned warehouses into live/work buildings with support retail services such as a grocery store is associated with the development of the multi-modal station.

3.1 - Linear Park Along the Railroad

The conversion of the CSX right-of-way into a linear park is re-created as an ecotone**,** or "an area where adjacent ecosystems overlap with an ecology all its own, able to support forms of life [as well as activities and events] not found in either of the adjacent systems" (Herbert Muschamp, 2000). The coexistence of an alternative transportation corridor for bicyclists, skateboarders, and pedestrians, a wildlife corridor, and a passive recreation area within the existing infrastructure system exemplifies a new typology for public space **(see Figure 5.0)**. This park begins as a series of three hardscape plazas connected by wood and granite walkways that recall the geometry of railroad tracks. Partial sections of the track are left intact within the path and bordered by native grasses and wildflowers. Hardscape berms define the edges between the plazas and path system, thus providing skateboarders and rollerbladers with a place to claim as their

own. Otherwise, the programs for these interval spaces are left undefined and are expected to evolve according to use.

The linear park provides access to the remediation gardens and connects a series of plazas, including an industrial plaza offset from the Hannah Manufacturing Plant's former incinerator. As a remnant artifact of the industrial character of the site, the incinerator is left as a nostalgic ruin. However, there is the future possibility of reusing the incinerator for recovering heavy metals from the phytoremediation process.

CONSERVATION MANAGEMENT CONTEXT

Urban parks have traditionally been non-contributors to regional biodiversity, acting as "sink" habitats, or "areas where local productivity is less than local mortality" (Pulliam and Dunning, in Meffe and Carroll, 1997). Similarly, ecological processes within most urban parks are noticeably absent. Together, these lost opportunities have resulted in an overall reduction in ecosystem health and represent a missing link in regional conservation management efforts. A systems level approach focusing on species interactions, abiotic processes and anthropocentric influences represents a point of departure, or *grounding,* for urban parks designed to meet the four basic principles of conservation management, as outlined by Meffe and Carroll (1997) in Principles of Conservation Ecology:

1) Critical ecological processes and biodiversity composition must be maintained.
2) External threats must be minimized and external benefits maximized.
3) Evolutionary processes must be conserved.
4) Management must be adaptive and minimally intrusive.

While ultimately depending on work that is done at the ecosystem and landscape levels, this study focuses on the urban park, at the scale of habitat and community, to meet the following conservation goals:

1) To increase local diversity of native vegetation, birds, amphibians, butterflies and other beneficial insects,
2) To restore representational units of secondary succession seres in the Georgia Piedmont, and
3) To provide ecological educational and experimental opportunities for the University of Georgia's College of the Environment and the local community.

Given that theories of conservation ecology provide a management context for this study, restoration ecology shall offer insight into the principles and practices of managing succession as a primary management strategy. The "reestablishment of historic successional patterns as the primary prerequisite for sustaining fragile landscapes" is seen as the primary management strategy within which the above conservation goals will be addressed (Sauer, 1998).

ADAPTIVE MANAGEMENT PLAN AND ON-GOING MONITORING

While phytoremediation and restoration of secondary successional seres guide management activities, the continual experimentation, monitoring, and reevaluation of goals and objectives will determine the success of this plan. However, this thesis focuses its investigation on the establishment of a framework for physical design considerations, and does not attempt to solve the technical, political, or economic aspects of remediation and restoration management. While many of the technical problems are identifiable, others would only be revealed through observation and analysis of the designed pilot field studies described above. Built-in feedback mechanisms of the initial experiments

would provide insight into uncertainties before investing a considerable amount of time and resources.

In addition to the perceived conservation objectives, the political and socio-economic issues involved in resource allocation would have to be considered. While remediation and restoration are justifiable goals in terms of their ecological and educational values, there is limited experience and documentation of similar projects in urban parks. There are few benchmarks to go by, and fewer standards by which success can be measured. These uncertainties add to the controversy associated with trying to allocate limited resources and mediate between the conflicting interests of diverse user groups.

Beyond the scope of this thesis, the management plan for this site would require the coordination and participation of experts, local residents, landowners, responsible agencies, local government and all other interested parties in order to facilitate cleanup, research, and the eventual reuse of the site. Specifically, in order to develop a management plan that has a broad base of support, it would be necessary to establish a group of permanent advisors, technical and otherwise. The continued involvement of all interested stakeholders would enable effective and honest evaluation, as well as provide a mechanism through which the redirection of resources, where necessary, could occur. The multitude of issues, such as policy, scientific opinion, funding, and demographics would be incorporated into the planning process of setting and achieving goals and objectives.

Figure 4.6 – PAH Gardens + Pedestrian Bridge + Incinerator Plaza

Figure 4.7 – Heavy Metal Remediation Greenhouse Gardens

Figure 4.8 – Volatiles Remediation Gardens : Poplars + Pine

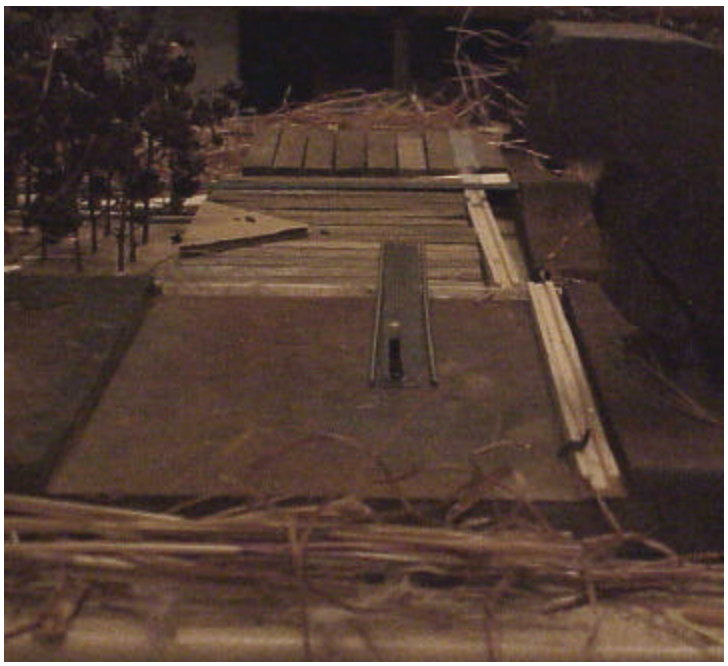


Figure 4.9 – Stormwater Rills and Gardens

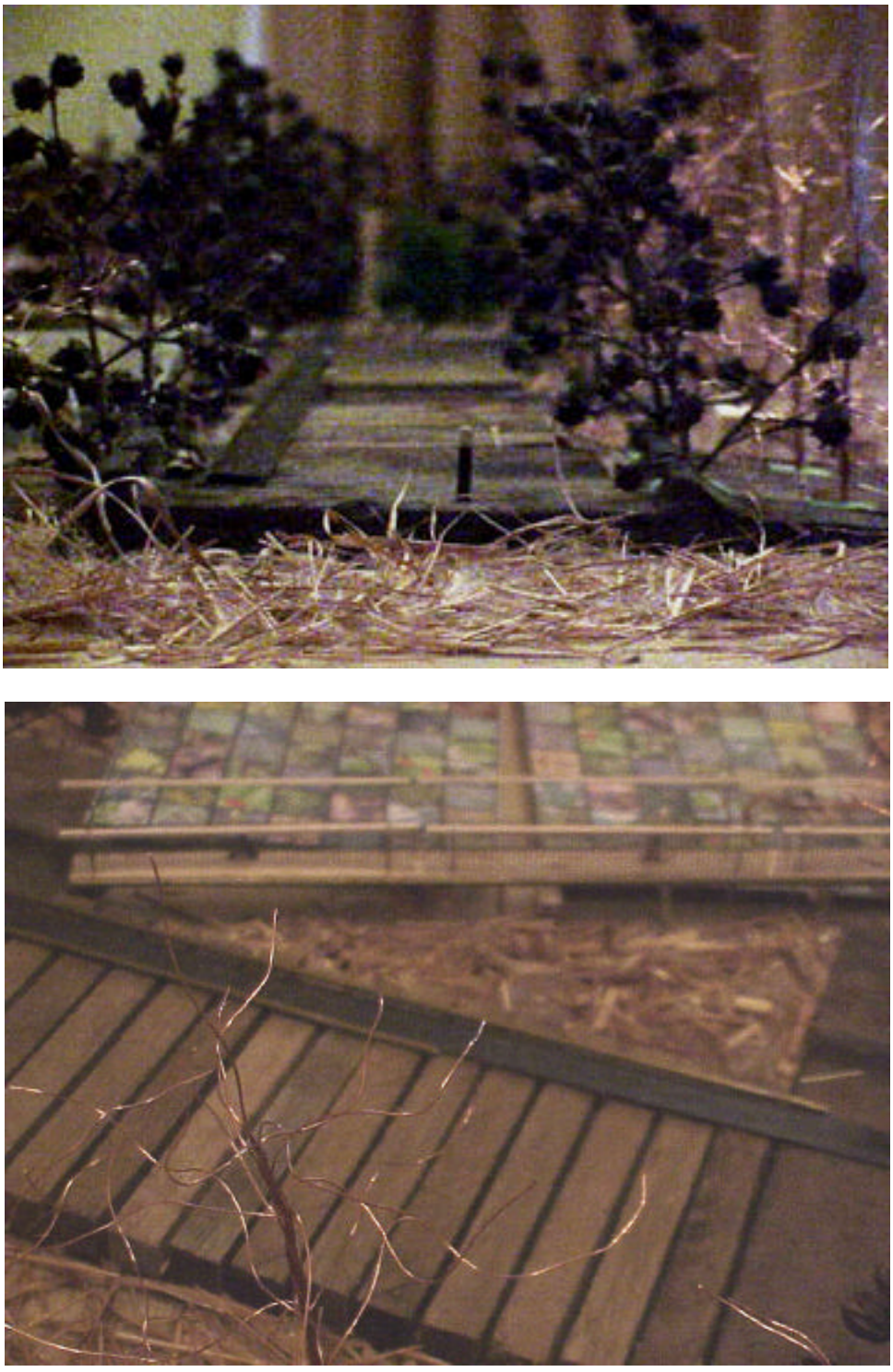
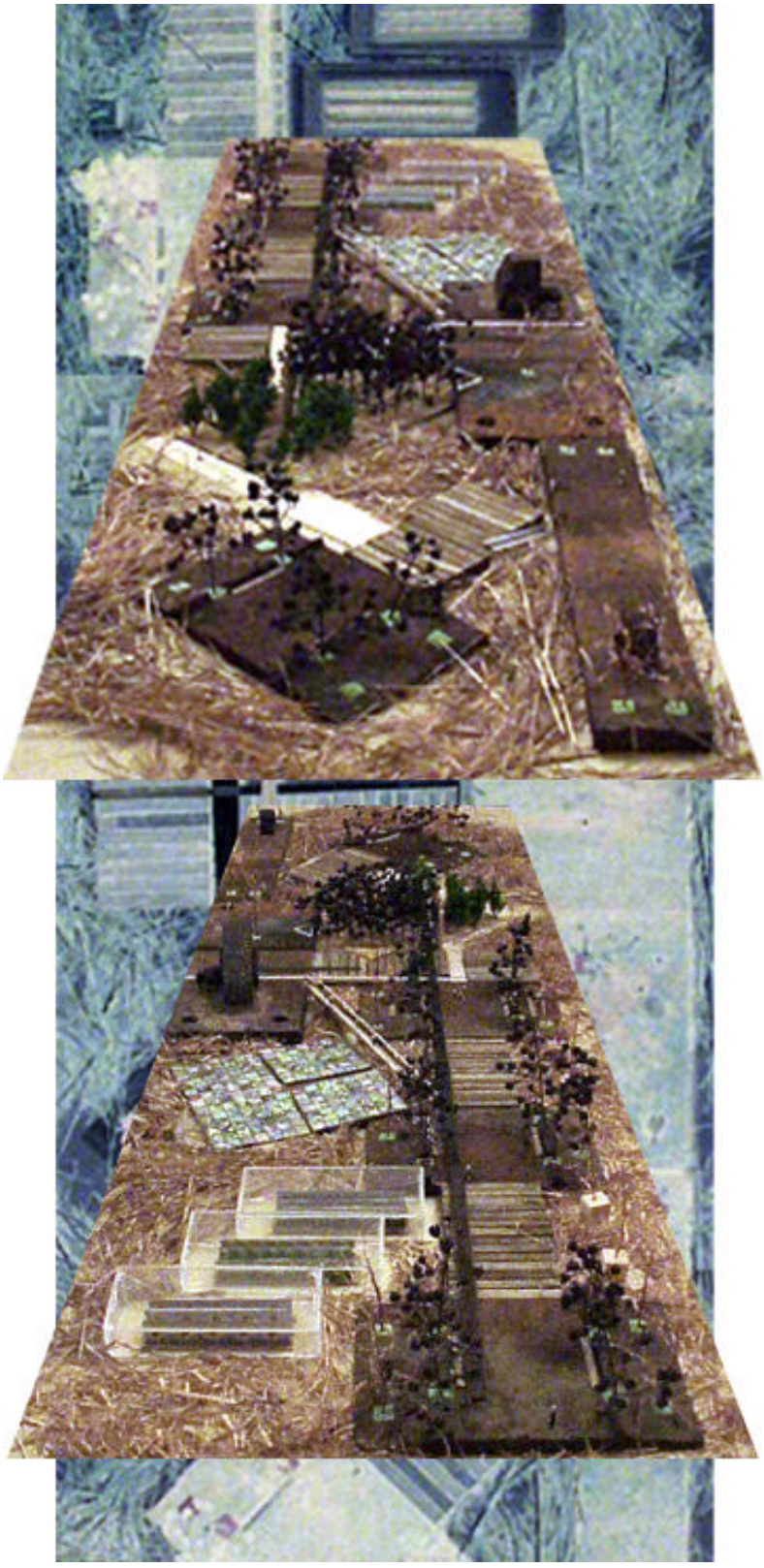
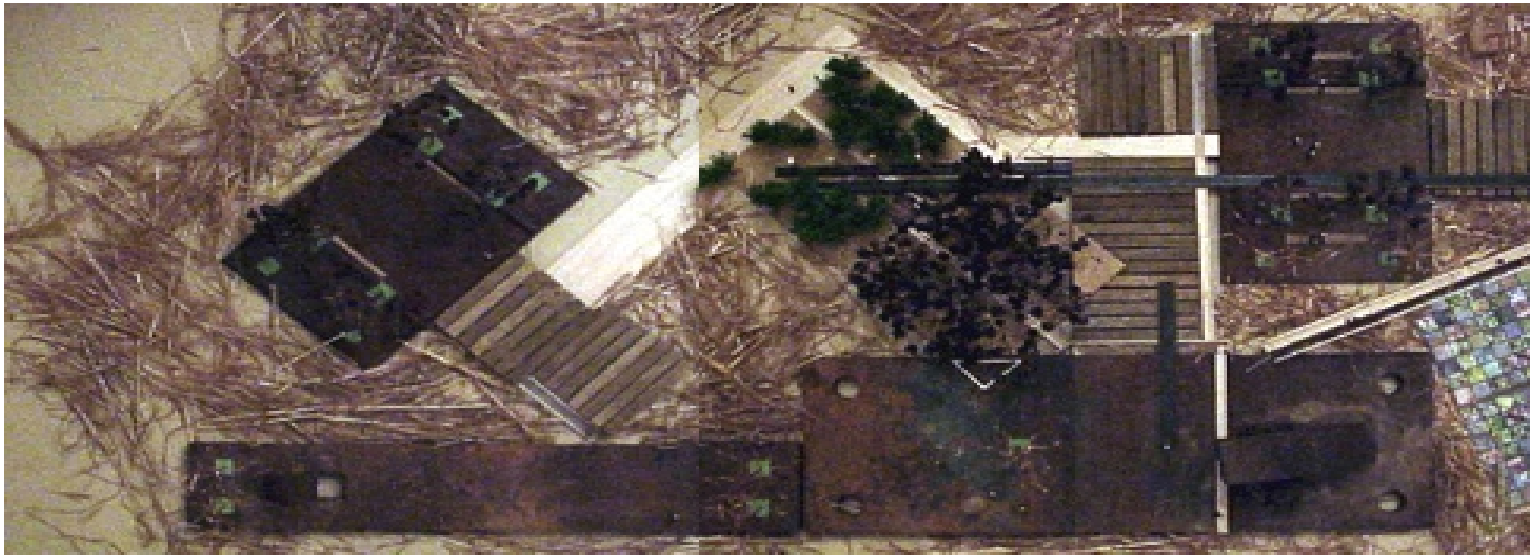


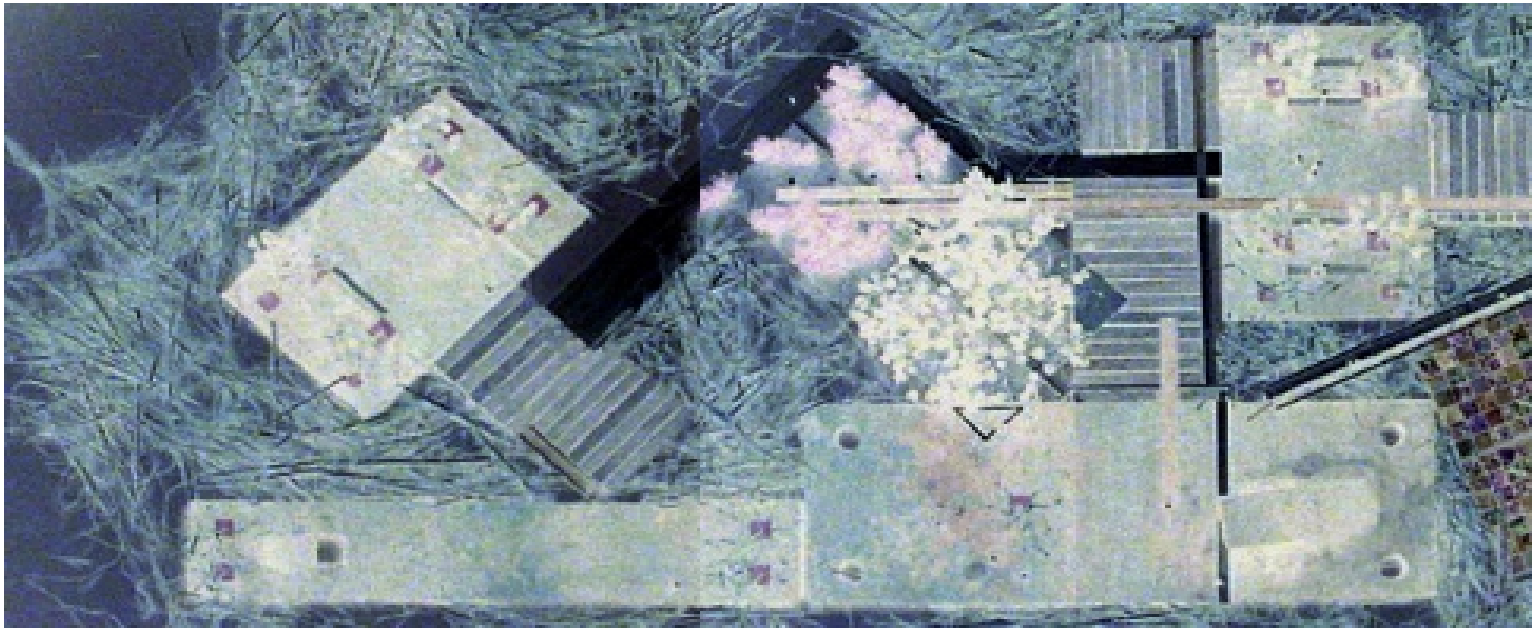
Figure 5.0 – Linear Park



Perspective Collage



Model-Plan View



CHAPTER 5

CONCLUSIONS

As this landscape project has attempted to reveal, the post-industrial condition is extremely complex. The narratives represented in the case studies and in the study site are selective at best. While the discourse of ideas presented here represents a multitude of voices and varying perspectives, they are less than exhaustive and do not reach consensus. Similarly, the results of the design application offer an individual effort, at a fixed point in time, to explore the implications of contemporary landscape theory. The inherent indeterminacy of the collage and juxtaposition of selected ideas manifests only one of a multitude of possible expressions. By its very nature, design is a limited realm of experience that attempts to reconcile the interrelationships between conflicting interests. Granted the freedom of an intellectual inquiry, the author's own ideas have been formulated through the distillation of a particular perspective from which to proceed. Typical of any design endeavor, decisions were made based on the availability of information. As such, the development of ideas and interest in landscape recovery will continue to be influenced by increased experience and the consilience of expanded knowledge.

The search for ideas here manifests a process of individual theoretical inquiry, rather than the collaboration that its realization would require. As an interdisciplinary endeavor of shared experience, the landscape project mediates between differing perspectives and conflicting interests. In constructing the final model, an attempt was

made to evoke, in built form, the qualities, associations, and implications of post-industrial landscape theory. The ideas of juxtaposition and collage were utilized as the primary tools to explore the intersection, overlay, connectivity and adjacency of what are typical conceived of as separate systems and entities. By utilizing this method of construction, the phenomenological experience of moving through the space was visualized while accommodating the experimentation of found on-site materials and their implications for final design decisions. The resultant, and often accidental, relationships between the organic and built geometries exemplify an intentional experience at the nexus between natural systems, artistic inspiration and cultural engagement.

As an experimental landscape, the principle of indeterminacy was granted freedom to accommodate uncertainty in future decisions, needs, and desires. As an initial step in the reinhabitation of this site, the geometries of the remediation gardens would be reconfigured, once the soil was reclaimed, to accommodate future use. While certain urban design decisions elicit an experience of landscape as human invention, intermingling zones of old-field succession and experimentation are loosely defined and restored for their role in connecting the site to the larger ecological processes of the Oconnee River Greenway. This idea of connectivity operates within the site as well to accept the notion of non-hierarchical movement through the site by expressing patterns of circulation as open-ended directives, rather than as prescribed narratives.

While the liabilities and risks associated with environmental remediation are acknowledged, they are conceived of here as opportunities to engage the user in a process of implication, discovery and eidetic experience. Offering a response of “counter design” (Tschumi, 1972), this urban park typology attempts to reveal an optimism by which the

redesign of post-industrial sites can consider alternatives to the current disregard of ecological and cultural values by energizing the imagination of our own re-invention.

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