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foreword
In *After the City*, Lars Lerup builds on an argument Michel Serres made in describing Rome, in which he imagines architecture as domesticated armament, arrested projectiles, “stones at rest.” Lerup elaborates: “Rome as represented by the Pantheon is a quarry of weapons, dormant, petrified and opaque.” It strikes me that “a quarry of weapons” is both an evocative description of ancient Roman sites and an apt characterization of architectural education. Weaponry here stands for the tools (i.e. skills and reflective intellect) that are necessary for the successful navigation of an uncertain future. Likewise the parallels between ancient Rome and present-day Detroit are as provocative as they are disturbing. Both are in many ways undone cities/ quarries with the ability to educate, critique, aggravate and inspire. Both were undone by a myriad of attacks but, more poignantly, by a culture of abandonment and neglect.

I am intrigued too with the notion that architectural education might be the means to set and perpetuate the stones in motion. Perhaps more precisely, it reflects a pre-natural state where stones are neither weaponry nor at rest as architecture, but in the process of forming. Or, if weaponry seems accurate, then architectural education is a medium for breaking apart exhausted conventions of practice in favor of more malleable and developing forms of practice — a discourse where multiple possibilities flourish, where differences are brought into such sharp focus that the inevitable friction kindles intellectual ferment.

The students and faculty of the Architecture Program at the University of Michigan present *Dimensions 16* in that light. The following pages offer a reflection of what we are thinking and its effect on our production. The work of the 2001-2002 Fellows, the selected thesis projects, the graduate level studios interrogating Architecture and Landscape and the undergraduate studios focused on an architecture of Permanence/Impermanence are but four of the trajectories within this refracted field. *Dimensions 16* is a sideways glance into our collective activities of design, criticism and research. We aim at an architectural production both focused/probative and critical/grounded. Restless minds and bodies — stones in motion.

Tom Buresh  
Chair of Architecture

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This semester the students engaged in design as a form of research as a foundation for an ethical practice. Over the course of the semester we struggled with issues associated with ecological design, questioning how to define it and how architects might engage it critically. To focus this broad area of study, the studios explored what we came to call “sustainable material practices.” Each studio focused on a single material or material process. They explored themes such as permanence, ephemerality, ritual and practice and their respective spatial implications. In this way each studio sought to engage broader cultural issues, as well as quantitative issues associated with the technological aspects of ecological design.

For the lecture series we invited an educator, a philosopher and a practitioner to share ideas and inform our investigations. Michelle Addington, who is both a mechanical engineer and an architect, began the series by speaking about small-scale issues that can have large consequences. Next, Manual DeLanda, a philosopher and computer hacker, went cosmic on us with a discussion of genetically generated architecture and Deleuzian ontology. Louisa Hutton, an architect practicing in London and Berlin with her partner Matthias Sauerbruch, concluded the series. The work of Sauerbruch Hutton deals with ecology and sustainability not simply in a quantitative and technical manner, but also in a qualitative and sensual way. She spoke of ecology at three scales: the ecology of the city and the ability to harness its energies and intensities; the ecology of the building and its ability to exploit the wind and sun; finally, the ecology of space itself.

While the work of the individual studios ranged in scale from that of the city to that of a project’s material components, all five studios embraced technology not as an end in itself, but in service to architecture — to the production of meaningful provocative spaces.

Craig Borum, Coordinator
between baptism and blacktop

Craig Borum

Owing to accelerations in urban and suburban growth, impervious ground surfaces have vastly expanded during the last fifty years. Rainwater in the form of surface runoff reaches our rivers, lakes and streams at a rapidly increasing rate. Flooding and water pollution become more prevalent as vegetation and porous ground surfaces are replaced with asphalt and single-ply membranes that inhibit water absorption and contribute to runoff that can pollute our water supplies. Managing this runoff is one of the most significant issues facing municipalities who seek to balance growth with a sustainable environment. The studio addressed site ecology by confronting the issue of storm-water runoff, not as a constraint, but as a potential foundation for the design process.

With this goal in mind, the studio was presented with two means by which water can become a source of creative inspiration: through its materiality and its symbolic function. Ray and Charles Eames’s film *Blacktop* of 1952 draws upon the materiality of water. In this eleven-minute extended close-up of an asphalt schoolyard being washed on a sunny afternoon, the Eameses elevate the mundane task of cleaning to art by reducing the activity to its essential materiality, the rhythms and turbulence of soap bubbles in flowing water. They highlight this effect by using J. S. Bach’s *Goldberg Variations* as the film score. A second example of the potential for water to transcend the everyday is the ritual of baptism, where water is symbolically elevated from the banal to the exceptional. During baptism, bathing in water represents spiritual cleansing and rebirth, transforming a mundane activity into a ritual act.
The studio explored the potential to transform the commonplace into the extraordinary through the juxtaposition of blacktop and baptism, of the materiality and symbolism of water. These issues were the basis for interventions in the floodplain of a broad meander of the Huron River. The 55-acre site contains recreation fields, commuter parking lots and riverside pathways, all bisected by a four-lane road carrying 20,000 cars daily. It has long been an underutilized canyon dividing the University of Michigan's North and Central Campuses. Drawing upon their site analyses and related research, students formulated premises that elucidated found conditions and proposed alterations that mediate between storm water and site. Emphasis was placed on the integration of processes, both current and proposed, as the basis for a spatial experience that would engage the site at multiple scales and levels of programmatic interaction.

Khai Fung and Marie Law explored the movement of water as a foundation for reorganizing the urban in-between. They considered the flow from the site's existing watershed as well as that within its public infrastructure (storm-water drainage systems running within the Fuller Road right of way that discharge effluent directly into the Huron River). Their projects used these flows to reorganize existing activities and bring new activities to the site.
To make the flood line a visible and integral part of the site, this proposal repositioned and underscored existing programmatic elements. A bosque of trees planted along the northwestern edge of the site marks the flood plain by differentiating species planted to either side of the line. Within the flood plain, the bosque is planted with sycamores, while its upland species would be red and white oaks. In the spring, seasonal flooding would make the high water line visible. During the fall, it would be reflected in the hues of the species' autumn foliage. At other times, the diverse textures of the bark and forms of tree canopies would have a similar effect.

Running counter to the line demarcating the floodplain, drainage of the existing watershed informs the formal ordering system for programs and further planting. It organizes various types of pedestrian movement through the site, accommodating commuters walking from parking to work, runners jogging through the site and students passing between north and central campuses.

The existing pool and playing fields are reconstructed to heighten their connection to the specifics of site and topography. A new indoor pool projected into the floodplain provides for the temporal juxtaposition of swimming water and floodwater. During periods of flood, the playing fields would become islands in the site. Mis-registration of the fields' boundaries and the flood line allows amenities to be accommodated in the sidelines, along with drainage and irrigation for the playing surfaces.

Living "machines" to filter runoff are created by depressions in the existing topography, planted with appropriate species and engineered with specific soil types to operate ecologically. These depressions form a pattern that blankets the site regardless of program, except in the playing fields and the pool, where they become a series of volumes bringing daylight into the building.

Decentralized commuter parking is interspersed among these zones. The field of living machines and driving machines forms a datum against which seasonal and daily fluctuations of vegetation and rainwater are registered.
Marie Law

This proposal articulates the site’s existing hydrological systems through subtle modifications in topography, planting, and program. These interventions enhance the experience of existing activities on the site and draw attention to movement of water across and through it. The existing recreational activities and commuter parking lots, currently defined by chalked lines and painted stripes, are easily reorganized. The proposal activates the intermediate areas to aid in the management and treatment of water. Articulated water channels provide infrastructure for other activities such as community gardens and parks.

The project reorganizes the site from the point of view of both vehicular and pedestrian circulation. Although it appears from Fuller Road as a continuous landscape that stretches unbroken between the two campuses, the site actually consists of smaller zones that respond to particular conditions of moisture, elevation and orientation, based on topography and proximity to the river. These ecological and topographic stratifications run counter to the trajectory of the road, which bisects the site. This proposal reorients the existing programmatic elements so that they run perpendicular to the road and align with existing water runoff routes. Thus both the pedestrian and the automobile passenger move through a rhythm of textures, colors and programmatic elements that comprise a cross section of the site’s varied qualities. This linear section cut through the site was studied in relation to two different modes of experience — at speeds of 8.5 mph (bicycle/pedestrian) and 35 mph (automobile) respectively. Texture, color, mass and scale were manipulated to avoid privileging either of these experiences.
In *A Landscape of Events*, Paul Virilio asks us to reconsider history through the agency of time and not space. These essays invite us to reconsider how we perceive an event in the context of historical time. Virilio proposes that the ordering of events is no longer plausible, or even possible, under the conventional rubric of historical accounting.

The Wallenberg studio was framed by concepts of sustainability and conditioned by notions of permanence and impermanence. It offered the opportunity to question the traditional role of architecture as a practice producing permanent artifacts that physically and symbolically mark cultural, social, political and economic events. Thus, we investigated architecture as an ephemeral entity that varies over time.

The complexity of contemporary society, which derives in part from the volatility of the current global political, economic and environmental situation, may no longer sustain such traditional approaches to the built environment. The permanence of the built environment, as both a physical and a symbolic condition, is now more than ever set within a culture whose pluralism is difficult to fathom and address in a timely fashion. Our accelerated pace of expectations and disappointments sustains a consumerism more interested in the perception of the "new-and-improved" than
the loyalty of the "built-to-last." The building as a permanent marker, symbol and/or icon is increasingly ineffective within a matrix of cultural contingencies, variables and temporalities. As Bernard Tschumi argues in his forward to Virilio's text:

For us, as architects, time is spatial because space is what we construct, and time is there to activate these spaces, occasionally to transform them by challenging the perception of their boundaries. Time is what allows us to measure space. ... In "Probable Imminence," Virilio notes that "long-term" has become so long that it now exceeds our capacity for statistical prediction, but "short-term" has accelerated so much that immediate decisions are the only decisions ever made. Memory and continuous time are now "academic." If, in the university system, nothing ever seems urgent, in government, on the contrary, everything goes fast; decisions are made in five minutes, a quarter of an hour, an hour. "Long-term" means "a week."1

The studio "Best In Show" offered students the opportunity to address issues pertaining to sustainable design within the context of a temporal event. The 86th Annual Detroit Kennel Club Dog Show, held at the COBO Conference/Exhibition Center in Detroit, Michigan, was the venue for an investigation into a system of temporary installations involving multiple architectural, programmatic and infrastructural issues. The studio questioned how a set of interventions could be both background and foreground, generative and residual, explicit and implicit, in the context of a convention center and duration of one week.

The Annual Dog Show of the Detroit Kennel Club conflates issues of animal and human habitation and habituation (the habit-forming, ritualistic and repetitive procedures and protocols present at these events), as well as professional and personal dealings, commercial and collectable production, and nurturing and competitive disposition, as byproducts of such an event. The studio engaged the dynamic and static rapport and antagonisms between Detroit's COBO Convention Center as host building and the Detroit Kennel Club Dog Show as guest event.

Students examined how their intervention would operate within with the structure, tectonics, materials and program of the convention center and how it might be adapted to other urban scenarios and events. Their strategies adapted the materials and energies of the initial dog show event to other temporary or permanent architectural and urban proposals. Analogous to machine parts cannibalized to make new and improved mechanisms, the event could thus perpetuate itself through its various materials and parts. The work fulfilled three general criteria: the installations were to operate within fixed, limited cycles of time; they were to consist of demountable and transportable systems; they were to be installed both in the convention center and in its immediate environs, comprising Hart Plaza and a network of parks, outdoor amphitheaters and river front walkways.

Kristen Dean

The Annual Dog Show of the Detroit Kennel Club promotes, through a deliberate set of events, the finest examples of each breed. The space of these events reflects the manner in which the dogs are positioned for display. The proposal highlights the spectator's interaction with the events through a set of vegetal elements that foreground and background the various show rings, benching and grooming stations and commercial venues. Components of this temporary park are also deployed throughout Detroit at the conclusion of the dog show.
Amanda Slaughter

The Annual Detroit Kennel Club Dog Show is a spectacle that could be analyzed in terms of pageantry. The proposal consists of an urban stage-set where the participants, dogs, handlers and spectators could participate in the theatrics of such an event. It emphasizes the hierarchical relationship between the show rings and the supporting functions of grooming areas and benching stations, which serve as structural and visual supports for the rings. A series of scrims demarcating the rings convey information about the current competition as well as the history and lineage of the event.
Joseph Zinke

The temporary installation for the Annual Detroit Kennel Club Dog Show comprises a collection of modular systems and components hierarchically organized as hubs and satellites. Elevating the show rings gives them greater visual prominence and isolation, while the ground level is a field condition where the support functions take place. This provides the audience more direct visual access to the grooming, benching, and vending stations while emphasizing the importance of the activities in the rings.
Infrastructural Hot Pursuit
Using Heat as a Focus for Design

Karl Daubmann

Siting a campfire is one of the first architectural acts. Locating the fire defines space, makes place, and brings people together.1 There is a poetic efficiency to this scenario wherein the byproducts of combustion (heat and light) are spatially ambiguous commodities. The fire is fixed and located in space by a pile of burning wood possibly bounded by a ring of stones. In contrast, the thermal space of the fire is ambiguous. The radiant heat occupies the area closest to the fire and expands and contracts with the intensity of the fire. The convective heat (along with smoke and smells) occupies a broader zone and is susceptible to external forces such as the speed and direction of wind.

Architecture students are usually exposed to the topic of heat in a technology course, but they rarely consider it as a generator for design. This studio was primarily interested in the simultaneity of fixity and ambiguity that exists in the analogy of the campfire and explored these as potential linkages between architectural space and thermal environments. The studio offered designers an environment to test ideas about the generative role of heat through the definition of public space with components other than walls and roofs but simply with heat. The investigation into thermal effects provided two discrete points of departure: the scientific and the sensual. The scientific aspects are quantifiable and are based on objective rules of technical understanding. The sensual elements, on the other hand, are qualitative and subjective; they pertain to or affect the senses and can only be tested by the body's organs of perception. The students were asked to consider the role of both and they were able to fluidly move between science and senses.

The research component of the studio (the first half of the semester) explored these scientific thermal transfer processes. Heat is measured in standard units; it is gained and lost through proven transfer methods (conduction, convection and radiation), whose processes are predictable.2 The benefits derived from understanding and controlling the thermal environment include more efficient occupation of buildings, reduced energy consumption and less pollution caused by heating and cooling.

The final project of the studio continued the development of the topics from the research component, but expanded the goals by rejecting the idea of simply controlling heat as a means of creating comfort in favor of a broader approach of choreographing a sequence of thermal experiences such as moving from a temperature outside of a building to the temperature of the internal space. This component of the studio explored heat's relationship to the senses. The adult human body has about seven square feet of surface area capable of sensing subtle temperature variations. Although closely monitored and studied, human comfort remains subjective.

**infrastructure**

*n.* 1. The basic framework or features of a system or organization. 2. The basic facilities and equipment needed for the functioning of a country or area

*(WordNet® 1.6, © 1997 Princeton University)*

**interstitial**

*adj.* 1. Relating to, occurring in, or affecting interstices. 2. Anatomy. Relating to or situated in the small, narrow spaces between tissues or parts of an organ: interstitial cells; interstitial fluid.

*(The American Heritage Dictionary of the English Language, 2000)*


Students investigated insulation as the most common mode for reducing heat transmission. The root of the word *(insula)* means island, clearly articulating the goal of this strategy — to thermally separate the inside from the outside with the assumption that the inside is either too hot or too cold. The practice of insulating has evolved over the years into nothing more than stuffing the building enclosure with various forms of insulating materials. The studio completely transformed the mundane practice of “stuffing” in an attempt to impact a “thermospatial” sequence. Opportunities for overstuffing, carving and molding the insulation yielded change in the thermal properties of the wall and, in effect, the thermal properties of the entire architectural experience.

The students investigated the volumetric potential of the space within the wall to accommodate program, create material effects, and the potential for certain programs to actually be insulation. Designers studied the possibility of inhabiting the space of the wall in conjunction with the thermal demarcation of space. As a result, these designers invaded the interstitial spaces and occupied them with a “thermospatial” infrastructure, creating a condition of the *infrastratial*. The projects presented here illustrate the performative potential of the *infrastratial*, through research from the early part of the semester and through architectural proposals of final design projects.

**Research: experiencing the cold**

The students in this studio explored issues of conduction, convection and radiation through research, as well as a design project in which they were asked to explore the experiential aspects of temperature. The first project was a shelter for one person in a very cold climate. The students worked at full scale, building mockups and then placing themselves inside to test the shelter's ability to retain or transmit heat. The project emphasized layering and insulation as methods of thermally insulating inside from outside. The projects' skins were developed to explore volume, space, containment and material effects.

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3 Mosteller formula for body surface area calculation: \( (m) = \frac{[Ht(cm) \times Wt(kg)]}{3600} \)

John Shields and Eric Maring used their shelter project to explore “ex-sulation.” The goal was to take the insulation from the inside of the wall and move it to the outside giving the wall a softness. Their project developed from investigations into biological examples of exoskeletons and transferred this knowledge to heat instead of structure. An external skin was developed as a spatial layer of transparent plastic volumes filled with cellulose insulation. The plastic served two roles: it provided a waterproof layer and compartmentalized the cellulose, which has a tendency to settle over time due to gravity.

Courtney Wise and Jeff Ponitz designed and built a shelter with a flexible structural system, seeking to create dynamic thermal space by linking spatial deformations to the occupation of the human body. Inhabiting their shelter caused the shelter to shrink and move the warmer air trapped at the top, bringing the warmer air in closer proximity to the user. They studied the igloo, which creates temperature stratification with a minimal use of material, and exploited the flexible nature of their building, creating a suspended seat that elevated the user off of the cold ground.
Pockets were the conceptual origin for Marcy Giannunzio and Jonathan Eggert. They tested various materials at specific body locations attempting to customize the amount of insulation required for various points of bodily heat loss. Their final iteration uses recycled materials to fill foldable pockets that can be arranged in different groupings depending on external and internal temperature differentials (seasonal and/or diurnal variations) and inhabitant preferences, which can be changed hourly depending on the nature of the inhabitant.

Stewart Hicks and Andrea Righi created a dynamic shelter based on the mobile precedent of the yurt. Seasonal temperature variations and a dynamic insulating material informed the changing nature of this proposal. During warmer months the shelter uses clear plastic as a cladding that opens to allow breezes to penetrate. In the fall, collected leaves fill the plastic skin, creating a layer of natural insulation and color. Over the course of the winter the leaves decompose, thus producing heat, and transform into soil to be used for planting the following spring.
DESIGN: Going to the movies

A movie theater complex was the focus of the final design project. It is a program type that has had, since its inception in the 1920s, strong ties to the development of air conditioning. This relationship grew from multiple constraints concerning building codes, economics and marketing. Movie houses of the 1920s were governed by strict building code requirements for ventilation, but the introduction of air conditioning reflected less a desire on the part of the theaters to be in compliance with the law than an opportunity to attract audiences seeking comfort and luxury. As opposed to other building types like schools that used natural ventilation to meet these requirements, theaters opted for technology over nature to create the illusion of a perfectly designed interior climate.5

The site for the final project in Chicago, a city whose climate provides extreme temperature fluctuations from season to season, required the students to address and respond to hot summers and cold, windy winters. The first four floors of Mies van der Rohe’s IBM Building were chosen as the site in which to insert the movie theater complex. Mies’s office building provides visual expansion of the interior space through a compressed building skin comprised of two layers of glass, which offer very little insulation. The existing building is an antithesis to the historic demands of a movie theater; traditionally a movie theater must be insulated from the exterior for both thermal and visual qualities. Mies’s building works inefficiently relative to both concerns. The projects explore possibilities for this programmatic insertion by developing thermal/spatial definition within the Miesian grid.

Brandon Weidenfeller developed his proposal based on the idea that the theaters require additional air handling units, which could be used during the day to address additional internal loads resulting from computers in the existing office spaces. The theaters and the interstitial zone that wraps them act as the mechanical system for the building, enclosing air-handling units between the theaters and a skin. The diagram shows the project in relation to the overall building, where additional cooling capacity can be linked to the vertical chases of the existing building. The public lobby is treated as an open space populated by monolithic theater “pods.”

Jonathan Eggert's entire proposal is independent of the existing building skin and incorporates the existing building cores into its form. The massing defines a public lobby space between the existing skin and the theaters. The residual zone of the public lobby is susceptible to thermal and lighting fluctuations based on the orientation relative to the external environment. In contrast, the theaters are inserted into a translucent figural volume that wraps through the four-story volume of the IBM building. The interstitial space between lobby and theater insulates the theaters thermally, acoustically and visually.
Courtney Wise separated the theater spaces from the screens, creating external viewing spaces between the audience and the screen so the theaters act like balconies. The theater surfaces act as large radiators to heat and cool these external volumes, providing comfort for audiences during moderate seasons. The sequences from conditioned to unconditioned space and from interior to exterior space provide a varied thermal sequence from ticket window to movie viewing to exiting, animating the experiential sequence of the consumer.
John Shields proposed an aggressive environmental strategy by removing the building skin of floors two through five, making the only conditioned spaces the theaters; the public lobbies are open-air. The interstitial space surrounding and insulating the theaters built upon his earlier research on "ex-sulation."
Ephemeralization

Jessica Gav and Kevin Osterhart, wall study

Gloria Dongeun Lee

Steelcase plant, Holland, Michigan
This studio was based on the notion of *Ephemeralization*, in which the guiding principle of a sustaining economy can be described by R. Buckminster Fuller's famous slogan "doing the most with the least." *Ephemeralization* essentially means achieving "greater effects with decreasing expenditure of materials [and] constant improvements in the ratio of input to output." In practical terms, this means the reduction and reuse of materials to achieve a certain end. The challenge was to reexamine conventional notions of materiality. As Fuller himself noted, *Ephemeralization* concerns more than form and structure: "In architecture, form is a noun; in industry, form is a verb." Our hypothesis was that regional industry and the forces of industrial production are technical and cultural resources that can be *ephemeralized*. Ultimately, the goal of the studio was to expand the definition of *Ephemeralization* by challenging contemporary practices of sustainable design.

Just as Fuller looked to industry to anticipate the future of architectural production, we looked to the Detroit region's tradition of industrial manufacturing. We focused on Detroit's automotive and furniture industries as models of efficient, economic and technologically-advanced production that could be applied to architecture through innovative building systems, manufacturing methods or material applications. Students conducted research on selected technologies in the areas of alternative energy, innovative manufacturing methods, recycled materials, integrated systems and flexible and modular construction.

Michael Leaevick, Bus using Monocogue

Molly Johnson, New vs. old bus surfaces

Kevin Bell, InfraStructural bus
Students applied their research findings to explore *Ephemeralization* in an individual learning environment, whether a school bus or a prototypical classroom. We were interested in building components that included classroom furnishings and equipment, packaged kitchens and bathrooms, acoustical panels, wall panels, structural systems, climatic control systems and energy harvesting systems. We explored recent developments in education and technology as they affect classroom design. The design of a small primary school in Los Angeles presented the opportunity to test the concept of *Ephemeralization* at the scales of both the classroom and the urban block. Situated at the edge of Koreatown along the Miracle Mile corridor, the site lies at the intersection of diverse scalar, cultural and programmatic conditions.

Each student was asked to construct his or her own definition of *Ephemeralization*. In some instances, this meant discovering unimagined uses for existing technologies and commonplace materials. Other strategies included capitalizing on local resources through intelligent transfers of technology. Sustainable architectural practice will involve creative and unforeseen use or even misuse of forces already manifest in other industries. It might mean making things lighter and stronger or multi-functional, or using alternative energy sources, smarter materials and furnishings, or more efficient and sustainable manufacturing technologies. *Ephemeralization* involves acting locally and bringing specificity to the making of spaces, surfaces, programs and urban environments.
PRE-FABRICATED AND CUSTOMIZABLE

Jaron Lubin

Made-to-order mass-produced goods, such as Herman Miller office systems, can be enhanced by the addition of myriad components to increase their functionality and consumer desirability. For a school in Los Angeles, a wall system prototype was designed to act as a flexible unit deployed in multiple contexts. The structural wall is prefabricated and customized to be inhabitable and act as furniture; furthermore, the wall is programmed to engage social practices of gathering, playing and creating.

Structural furniture based on an egg crate system is deployed throughout the site. It can be packed flat and delivered to the site for quick and easy assembly. A 3'-6" module allows for compatibility with other mass-manufactured components at a scale appropriate for children.

The private portions of the school are located at the rear of the site, and an open public space adjoins fast-paced Wilshire Boulevard. The juxtaposition of public and private space, automotive and pedestrian traffic, children and adults, contributes to functional intersections.
MULTI-THRESHOLDS
Kevin Osterhart

In this scheme, the boundary between two disparate conditions preserves their differences and creates a hybrid situation. These thresholds are defined and developed at various scales. The proposal for a “sustainable” urban elementary school includes multiple thresholds. Overlapping spaces create new transitions that can be inhabited and, more importantly, programmed to accommodate multiple functions. These overlapping spaces not only form a physical threshold that is programatically charged, but also provide the opportunity to heighten spatial awareness.
SURFACE SPACE
Molly Johnson

This project investigates evolving relationships of surface to object in educational milieus by exploring the individual's relationship to the built environment at multiple scales. At the scale of the site there is tension between spaces for groups, which involve dialogues among people and the space they inhabit, and solitary spaces, which involve the individual's relationship to the architecture alone. An individual's perception of space is not immediate, mechanical or superficial.

Through careful attention to surfaces and the conflation of program and space, traditionally opaque elements are dissolved into highly specific micro-zones. A network of spaces is organized to reflect the dualities of surface and object in response to programmatic and experiential requirements. Ephemeralization is understood as the controlled erosion of dense public constructs into articulated zones at the scale of the individual.
Architecture is not simply a platform that accommodates the viewing subject. It is a viewing mechanism that produces the subject. It precedes and frames its occupant.

Beatriz Colomina

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**immateriality and matter**

As the “immaterial” domain of communications media increasingly influences our lives, intangible matters are affecting our culture and impacting our built environment. As a delayed reflection of contemporary culture, current architectural discourse is strongly influenced by two-dimensional imagery. The billboard nature of New York City’s Times Square comes to mind, as well as the Las Vegas strip, which Denise Scott Brown and Robert Venturi first identified as being of architectural interest. We are part of a world that increasingly engages us in a nonphysical way, which is contrary to the physicality of building. Although three-dimensional space and commonplace materials remain the concerns of architects, materials and production methods are evolving through such technological innovations as mass customization and rapid prototyping. By investigating new uses for commonplace materials in relation to new technologies, this studio addressed issues of immateriality in a profession whose dominant concern is materiality.

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neutral interiors: structure and skin

Materials are no longer finishes that provide closure to a building. Instead they are critical starting points that open new possibilities for structuring the experience of space, for rethinking the seemingly banal surfaces of partition, curtain wall, chase space and hung ceiling that characterize the familiar landscape of contemporary building types.

Material neutralization originated with early-20th-century innovations in industrial production, resulting from automated milling procedures. Wall construction was revolutionized by the introduction of thin sheet products such as drywall and plywood, used in conjunction with the standardized structural frame. At the same time innovations in construction techniques and materials liberated the contested interior wall of its structural properties and load-bearing qualities and reduced it to a bare partition. Sheet-wall products replaced plaster, accommodating the modernist desire for smooth continuous surfaces without the need for hand-craftsmanship.

Whereas Gottfried Semper's original distinction between structure and skin enabled the wall to be conceived of as an independent, crafted surface, Le Corbusier's subsequent elaboration of this distinction allowed not only for seamless surfaces, but also for mass-standardization. Standardized interior wall systems, dominated by trade names such as Drywall, Sheet Rock and Homasote, have changed little since their inception in the early 1900s. Unlike traditional finish materials such as wood and plaster, where craft-based detailing draws explicitly upon the material's inherent properties, these mass-produced sheets are characterized by homogeneity and assembled using concealed joinery. Contemporary composite materials with similar properties are medium density fiberboard (MDF) and oriented strand board (OSB). In current practice these sheet materials are coated with various veneers or paint systems, so the sheet wall system takes on a position of neutrality or non-materiality.

Owing to the building's industry's prevalent use of such banal surface materials, it may seem counter-intuitive to devote a studio to uncovering the potential of these commonplace surface materials. Given their exploitation by the building industry, however, this is exactly where invention and creativity are needed. Gaining a critical understanding of the production methods and material properties of such wall systems was a prerequisite for architectural innovation in this studio. Students sought to expand the potential of these wall systems by challenging the neutral qualities of their immaterial surfaces.

Daniel Adams, material study

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site of production: power plant

Adding to the studio polemic, students intervened in an abandoned early-20th-century brick power station with its romantic evocation of early industrialism and its tangible materiality. The well-lit machine halls of early industrial buildings are cathedrals to industrialization; their construction relied on new technologies and materials of mass-production. The absence of interior partitions in these structures provides enormous potential for experimentation. The abandoned power station on the Huron River in Ypsilanti has the sensory and material properties of such sites of production, while providing a partition-free space as a framework for student intervention.

immaterial program: movie theater

The program of a movie theater provides an intangible component to the problem, offering architectural predicaments on both practical and conceptual levels. First, it entails a series of practical requirements, such as number of seats, means of egress and suitable acoustic conditions and viewing angles. Second, the sensual appreciation of one's environment remains a paramount concern in an image-saturated world. Materials may be apprehended by olfactory, tactile and auditory senses in addition to vision, whereas two-dimensional imagery arouses only auditory and visual stimulation.

The program reintroduced immateriality in a surprisingly tangible way, adding complexity and contradiction to the studio’s dilemma. How should one engage immateriality in a built space when the building features a real-time viewing experience? Is it necessary to bring the domains of materiality and immateriality together? Does material matter in an immaterial world?

studio work

material taxonomy

The studio-turned-laboratory began by constructing a sample library of sheet wall investigations. These included mutations and transformations of a single material, such as Homasote, gypsum boards, OSB or MDF, or a combination of these materials. Students used digital technology combined with craft-based methods to create the material samples. In addition, they used their tactile, olfactory, auditory and visual senses to analyze the potential of these samples, catalogued in a studio-wide resource nick-named the Sheet Wall Sample Library (SWSL).

The combination of digital craft with hands-on empirical testing proved especially useful when intervening in sheet wall production. Daniel Adams developed an “egg-crate” three-dimensional form by digital means and then allowed paper pulp (similar to Homasote pulp) to dry in a curved form. This process could potentially intervene in the manufacturing process of Homasote to create custom products on a mass-produced scale.

Daniel Adams, “Egg-crate” forms
The SWSL taxonomy included over two hundred samples that ranged from simple material manipulations to complex material composites. Juxtaposing the tactile qualities of two different materials, Patricia Wolfe stacked MDF and Homasote to create samples in both two- and three-dimensions.

Proposing a glowing load-bearing gypsum board, Kai Orion inserted reinforcement systems into the material and sandwiched in light-emitting plastics. Through researching the properties and applications of OSB, Wattie Chan discovered its untapped potential as a viable interior skin. He manipulated OSB surfaces by sanding, routing, and applying different finishes and pigments to elicit the unanticipated in the material. The Sheet Wall Sample Library proved to be a useful resource throughout the semester.
Prototype. A prototype is a construction that deals with issues of material, fabrication and use in a 1:1 relationship to individual ideas, i.e., it is not a representation of something — as in a model — but rather is the thing itself.\(^3\)

Borrowing from industrial design methodology, the material investigations included in the SWSL were implemented in a full-scale design of a wall segment in which students explored the spatial implications of their material innovations and production ideas. Empirical testing processes enabled them to consider their design in practical terms of performance and construction. Through ongoing full-scale experimentation they developed a greater understanding of how their design ideas could be executed by means of rapid prototyping and mass customization.

The prototypes ranged from investigations of material properties and material combinations to uses of new technology. For his wall prototype Daniel Adams used water-jet technology to create an egg-crate stud-system for a tactile undulating wall surface. Interested in the transition from digital model to built prototype, Patricia Wolfe constructed an amorphous staggered wall in which Homasote sections were precut and stacked to create a wall that functioned as both partition and seating element. Kai Orion continued his work on a glowing load-bearing gypsum board system by using Plexiglas ribbons that act as joinery between the gypsum modules. Charu Negandhi developed a panel screen system of materials with varied acoustic properties.

implementation

Inspired by Bauhaus pedagogy, students arrived at a design concept concerning materiality and wall systems before dealing with the complex issues intrinsic to the movie theater program and the power station site. Their design concepts originated in speculations concerning the spatial potential of their prototypes.

Students used drawings and models to modify design concepts they had already constructed in prototype, rather than using these media to represent an unbuilt condition. In this way, they acquired the tools to challenge and improve the neutral immaterial interior wall. Inherent to understanding the content of a wall, represented graphically by two parallel lines, were the knowledge of its material properties and the understanding of wall systems and their histories. Adhering to a program that reintroduced immateriality, image and ephemerality to a site and design devoted to materiality, the discussion of whether material really matters became rich and complex.
Three discrete walls inserted in the empty structural shell of the power station form highly differentiated spaces. The processional sequence owes its spatial continuity to three factors: material continuity is maintained by capitalizing on the flexibility of Homasote in relation to a regular structural system inserted in the once empty volume; the undulating walls qualify the visitor's experience by alternately focusing outward to the river and inward to the internal spatial sequence; the internal walls filter natural light and views as they guide the visitor on a sequence winding up and around the original volume to arrive at the theater proper.
The existing brick structure is conceived of as the first of many skins, while OSB panels delineate an internal sequence of programmatic and circulation spaces through their varying degrees of tactility. A glass skin wraps the entire south facade to expose the interior to passersby in the street. The building is illuminated by phosphorescent pigments on the OSB panels, as well as by reflections off the river. Like a pocket in the lining of a suit, the walls in the Light-box house certain functions: circulation lies between the two skins; the interior walls fold to accommodate seating for both the theater and the lounge, forming surprisingly open boundaries between spaces.
As the name of the project suggests, the intention was not to isolate program components from one another, but rather to weave them together by "folding space, blurring boundaries," thus creating a rich and dynamic spatial sequence. The movie theater forms a large open volume that contrasts smaller living spaces that surround it: a caretaker's apartment to the west and a cluster of dormitory spaces to the east. Light flows in from skylights above and trickles down the sides of a theater box hovering above the lobby, articulating the floating volume in relation to the smaller rooms. The most potent negotiations between public and private occur within these transitional spaces, which are mediated by a varied material palette. Metal grids provide surfaces for circulation while allowing light and view to pass through them. Translucent walls form screens onto which shadows of moving figures are projected, hinting at the activities taking place in zones beyond without sacrificing privacy. A wall blending Homasote and MDF ties the spaces together through sight and touch. This interweaving of theater and dwelling space results in a unique experience for the enjoyment of theater patrons and residents alike.
In 1997, more than 160 nations met in Kyoto, Japan, to establish guidelines and strategies for the limitation of greenhouse gas production. Although greenhouse gases are primarily released through natural processes, the anthropogenic contributions from fossil fuel combustion are increasing the atmospheric concentrations at an unprecedented rate. This rate of increase is an even greater concern than the total amount, as many components of the eco-system cannot compensate quickly enough in response. The intention of the Kyoto meeting was to draw up an action plan for the reduction of carbon dioxide emissions—the most significant anthropogenic contribution—at the global level. The resulting treaty, the Kyoto Protocol, established several tiers of emissions quotas and introduced an elaborate scheme for international trading of carbon. At the time, the goal seemed modestly achievable: a five percent reduction in collective greenhouse gas emissions by the developed countries as compared to a 1990 baseline. Ratification of the treaty began quickly, but failed to reach the required level of 55% of the participating nations for the treaty to take effect. While many have singled out the United States for its withdrawal from the treaty in 2001, many of the developing countries have balked for the same reason—the concern that the resulting higher energy costs will produce detrimental consequences for the economy.

Strategies for economic development, particularly those aimed at the developing countries, present an intractable problem in regard to global environmental agendas. Sound economies correlate strongly with per capita energy use; thus, as an inevitable consequence of globalization, the average energy use in developing countries will tend to rise toward the level of the United States, particularly as modernization brings energy intensive industry. This principle has already been demonstrated in the case of China, where modernization has improved the standard of living, but at the expense of rapid increases in greenhouse gas emissions and air pollution due to the use of poor quality coal.

The term sustainability was coined in the 1980s to resolve the conflict between economic development and environmental protection. Nearly two decades later, many researchers are beginning to wonder whether the term was only rhetorical:

"The political impetus that carried the idea of sustainable development so far and so quickly in public forums has also increasingly distanced it from its scientific and technological base. As a result, even when the political will necessary for development has been present, the knowledge and know-how to make some headway often have not."

The following discussion attempts to unravel the lineage of "green building" and energy conscious design as it occurred in the United States over the last three decades, and to mine that lineage for a conceptual approach that would avoid the mis-steps that have so seriously compromised the global environment. While many would argue that the mis-steps were the result of inaction, and as such the correct strategies—or the best practices—already exist but only need to be fully implemented, I am suggesting that our current environmental state may be the consequences of the strategies that are already in place.

The Arab oil embargo of 1973-1974 provoked the first scrutiny of the energy use by buildings and building systems since the early-20th century. The activities during and following the crisis were solution driven, energy was no longer abundant and, more importantly, no longer inexpensive. The new Department of Energy, spun off from the Atomic Energy Commission, assumed much of the responsibility for questioning both the energy use of and the necessity for these building systems. Early initiatives tackled many aspects of the problem from the purely technological — new control schemes, insulation, operating ranges — to the purely ideological — residents and building occupants were asked to do their part by turning back their thermostats, and the most committed assumed a Walden-esque lifestyle in which they shunned energy from the utility companies. Schools of architecture were quick to join in, but shifted the subject of their investigations to those that found a natural home in the architecture academy. Vernacular revivals and passive solar design adhered to the anti-establishment ideology, while the high-tech approach presumed that the visual exposure of ducts and mechanical components would be enough to bring the technology to the forefront and encourage more judicious use of energy. The initial success of the various approaches seemed to be promising, particularly the new control schemes, as energy use began to dip almost immediately, only to later resume its pre-energy crisis rate of climb when energy again became readily available again (see figure 1: note that energy used in the residential and commercial sectors is almost entirely due to buildings).
Many have blamed the return to "business-as-usual" energy use on a retrenchment of conservation efforts when availability was no longer threatened. Speed limits have almost returned to their pre-crisis levels, the installation of central air-conditioning in residences has nearly doubled since 1980, and sick building concerns have resurrected the use of older and less efficient control schemes. This generalization neglects, however, the many initiatives that have remained in place, the mandated improvements in equipment, the new building codes, and the expanded public awareness. Impetus continues to increase as concerns for the welfare of the global environment have replaced concerns about resource depletion and political instability. New initiatives are rapidly multiplying, from the Department of Energy's "Million Solar Roofs" campaign and "Energy Star®" labeling to LEED (Leadership in Energy and Environmental Design) certification and sustainable master planning. Many architects and engineers have responded to the public's growing concern with the environment and are promoting "green" buildings and design solutions. Manufacturers have been quick to join in, marketing their products as sustainable, environmentally friendly and/or low energy. Local and national governmental agencies have developed guidelines and checklists to ensure that these solutions and products are incorporated into the design and construction processes. The three legs necessary for initiatives to develop into standard practice are firmly in place: the public is aware enough to demand energy conservation and green buildings; designers and manufacturers are shifting their practice and production to meet these demands; and government is undergoing the necessary restructuring to facilitate the commitment to and longevity of "green" practices.

Nevertheless, the energy use by buildings continues to increase. In December 2000, the Energy Information Agency (EIA) projected that growth rates for energy demand in the commercial and residential sectors, in which buildings are the most significant energy consumers, will be 26% higher for the period from 1999 to 2020 than from 1984 to 1998. Two years earlier, the Department of Energy released results surveying energy use by commercial buildings, documenting that newer buildings used more electricity than old buildings, even though they generally have more energy-efficient features. The problem is not so much that energy conservation initiatives are flawed, but that they are focusing on marginal improvements in efficiencies rather than on substantial reductions in consumption. For example, newer buildings tend to be larger than existing buildings, with more square footage per occupant and per function. To further exacerbate energy use, additional space in a building increases the energy use of the ambient systems — lighting and HVAC — by as much as the square of the added floor space. Additional data from the EIA report in December 2000 projects that although the number of households is expected to increase by 1% a year, the residential energy demand will increase by 1.9%, while an increase in commercial floor space of 1.3% will produce a 2% increase in electricity use. Energy reductions wrought by efficiency improvements are quickly subsumed and surpassed by the energy demands to support the additional space. While proponents of many of the initiatives have argued that energy intensity (energy per $GDP, or gross domestic product) has been reduced and as such, the initiatives have had an impact, we still cannot overlook that the total energy use of buildings continues to climb at a disturbing rate (see figure 2 for trends in electricity).

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2 Energy Information Administration, Annual Energy Review 1999, DOE/EIA-0384(99)
It is this rise, of course, that is of concern for the global environment, particularly with regard to greenhouse gas emissions. The Department of Energy's budget request for Fiscal Year 2000 reported that "energy use in buildings is responsible for 35 percent of the Nation's carbon dioxide emissions, 48 percent of the sulfur dioxide emissions, and 23 percent of the nitrogen emissions ... [with] emissions expected to increase by more than 25 percent between now and 2010." Although many have lamented that the United States backed away from the Kyoto Protocol, one could perhaps assume that the federal government was aware of the enormous gap between projected emissions and earlier goals.

In September 2000, the Boston Globe highlighted a signature energy-efficient home that differed little from those that have been showcased for the last several years. It had many of the features associated with the genre — geothermal system, radiant flooring, copious daylight — as well as 10 tons of cellulose insulation that had been partially funded from the local electric company's program to promote energy-efficiency. The house does indeed use less energy per square foot than does the typical home in the region, but as it is a 5500 square foot home with only two occupants, one adult and one child, the total impact on greenhouse gas emissions is much more detrimental than it would have been had they stayed in their previous home. Size does matter.

The self-evident conclusion would seem to be the constraint of building size. Notwithstanding the difficulty of implementing and enforcing such a measure, it would have no impact on the existing building stock. Furthermore, the increasing size of buildings is not just a trend in the United States; in China, residential space has more than doubled over the last five years. Instead we should be thinking small about a completely different aspect of the building — its ambient systems (primarily HVAC and lighting). With the exception of specific building types that serve processes or equipment (for example, laboratories), most buildings employ ambient systems for the comfort and performance of the human occupants. Nevertheless, these systems are designed at the scale of the building rather than that of its functions, and certainly not at the discrete scale of its occupants. Instead of following the current trend of increasing the integration of building systems, we should be looking to decouple and discretionalize ambient systems. Most importantly, rather than prescribing solutions to improve efficiency, we can and should return to a more fundamental understanding of how we use energy in a building for environmental control.

Electric lighting alone can be responsible for as much as 50% of a commercial building's electricity use, and is estimated to be responsible for 20 to 25% of the nation's electricity use. One of the widest-spread energy conservation strategies involves the replacement of incandescent lamps with compact fluorescent lamps. With efficiencies approximately four times greater than incandescents, fluorescents have shed their "polyester" image and often are central to the front-line strategy in new energy-efficiency initiatives. It would certainly seem to make sense: relamping requires little infrastructural work and the capital costs are significantly lower than for major equipment overhauls. As such, with the dramatic increase in efficiency, relamping is a relatively painless and seemingly effective way to "pick the low-hanging fruit." The production of light from electricity, however, is an "uphill" energy conversion, and thus a process in which the maximum achievable efficiency, constrained by thermodynamic law, is quite low. If one examines total energy conversion efficiency — from coal mine to lamp — then both fluorescents and incandescents operate at net efficiencies below 5%. Almost all of the discussion regarding lighting efficacy has used stage efficiencies (in this case, the energy conversion within the luminaire) rather than cumulative or total efficiencies. As a result, eliminating one incandescent lamp has the approximately the same impact on reducing greenhouse

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Little questioned in many of these efforts are the quantity and quality of light in a space. Lighting, like HVAC systems, has been treated as an ambient system; we light space rather than things. Ambient lighting systems are designed to provide standard lighting levels on horizontal surfaces. Many standards determining the ideal illumination levels date from the 1950s, when ambient illumination became the norm after the spread of fluorescent lighting. Indeed, sales manuals from fluorescent companies were heavily responsible for the later light standards; early fluorescents offered no advantages over incandescents, so the primary marketing strategy was to convince consumers that they needed more light than that which could be provided by incandescents. In 1942, in one of the first manuals ever published on fluorescent lighting design, an engineer from General Electric attempted to circumvent the anticipated resistance to the higher light levels by providing anecdotal evidence:

Many years of lighting research and numerous field tests prove that if the illumination is satisfactory as regards quality, ... it is difficult indeed to provide too much light for the eyes. Minimum footcandle recommendations have always been based on considerations of economy and the availability of equipment. But the fact of the matter is that just as light enables people to see, so more and better light means more accurate and easier seeing. Actually, the reservoir of knowledge built up by the hundreds of experiments on the relation of light to seeing gives the lighting man more justification for recommending 100 or more footcandles today than he had in prescribing 5 footcandles or less two decades ago.6

Much of the knowledge, however, of how the eye responds to light was not developed until quite recently. Among the most important developments is that the eye has several complex mechanisms for seeing, all based on relative contrasts, such that the minimum necessary light level or the threshold for visual performance is up to 100 times less than previously assumed.7 The contrast ratio, which is the relative luminance between adjacent surfaces in the field of view, determines how well we see.8 The absolute levels on which standards are typically based on are almost meaningless above that threshold. If we could begin to think about lighting at the small scale — what the eye sees — and not the large scale — the building space — we could drop lighting levels quite dramatically while enhancing the visual experience. As the eye responds to stimuli logarithmically, a reduction of light levels by up to a factor of ten would not be noticeably different if contrast ratios are controlled. Energy consumption, however, would drop dramatically. A tenfold reduction in light consumption would produce a corresponding tenfold reduction in lighting energy use, but its real impact would be much greater. If we considered the reduction in terms of delivered energy — that is, from coal mine to lamp — then the total energy reduction would be closer to one-hundredfold.

Such an approach would have been impractical even a few years ago. Building interiors are so variable and occupants are so often unpredictable that it would be quite difficult, if not impossible, to design a lighting system that maintained acceptable performance. Today, however, we are beginning to have the tools and technologies to light discretely at the small scale. The sensor industry has undergone explosive growth due in part to the development of MEMS (micro-electro-mechanical systems). Sensors are not only rapidly dropping in price, they no longer require the infrastructure needed to support earlier monitoring systems. Occupancy sensors are routinely used to shut down light systems when no one is present, but luminance and position sensors have greater potential to manage the transient lighting levels in discrete locations as the sun and people move within a space. Simulation tools for energy and light analysis have already begun to simplify the lighting design process, allowing the designer to optimize the relationship between daylighting and artificial lighting as well as determine the most suitable building materials and luminaire positions. Indeed, any building owner equipped with a lighting simulation could simply reconsider the color of paint in order to reduce the light necessary for maintaining appropriate contrast ratios. Furthermore, many of the new technologies such as fiber optics and LEDs (light-emitting diodes), previously considered unsuitable for lighting at high levels or in large spaces, can be incorporated as we transition to discrete lighting. These new technologies bring many benefits for energy reduction: they allow for direct control of contrast; they reduce lighting losses due to the position and distance of the lamp; and they significantly reduce heat generation in a building, thereby reducing cooling costs as well.

The reduction of light levels, however, requires no new technologies. One has only to visit the typical small art museum to discover just how bright low levels can be. Very few collections will agree to lend any of their work, regardless of whether the work is in oil (less sensitive to light) or in water color (highly sensitive to light) unless the exhibiting museum agrees that the work will not receive more than 5 footcandles (fc) of illuminance. Standards for office lighting generally call for 30 fc or more, while facto-

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7 The threshold for distinguishable seeing, which means full color, texture and form recognition, is approximately 0.3 footcandles. This level is well documented in the literature.
8 Contrast ratio can be calculated in several ways, but the most accurate for general uses is considered to be the Burr, Ross and Malone contrast: \( \frac{L_1 - L_2}{L_1} \), where \( L_1 \) is the maximum luminance and \( L_2 \) is the minimum luminance.
ries can require more than 1000 fc. Exhibit designers carefully control wall color and textures, not as much for aesthetic or curatorial requirements, but to manage the contrast ratio so that the work can be legible regardless of the medium.

Rather than blanketing spaces with ambient light, a thoughtful heterogeneity could improve the visual aesthetics and performance of the space, while reducing the energy used by lighting by a factor of ten. This type of reduction is free — no investment, no infrastructural modifications, no need for new construction — and it is divisible (able to be implemented at any scale).

The lack of technological complexity seems to render this approach suspect, but one must recognize that the science behind this approach is quite sophisticated as far as building systems go. During the last century, as ambient building systems were being disseminated, there has rarely been any questioning as to the purpose of these systems. Only recently have we understood the neurological behavior of the eye. The simplicity of the approach is belied by its counter-intuitive actions. Few would agree, unless part of a demonstration, that darkening interior surfaces will improve the ability to see, or that flooding spaces with daylight, particularly in offices, will increase the need for artificial light. This is simple to demonstrate, but not so simple to imagine.
How do you define the task of the architect?

We see it as creating inspiring spaces, whether outside or inside, in the city or in the building, for the public or the individual client. These spaces have to function perfectly, of course, but they must also exceed this goal. They must be beautiful in the widest sense of the word, addressing each of the senses.

We try to react to all of the criteria given to the architect during the course of the design process — whether from the client with his or her changing wishes and budget, or from the authorities with their exacting demands — in the most creative way possible. That means taking things that at first seem negative and making a virtue out of them. Even in difficult situations one must keep one's sense of humor. Only from continuous and productive dialogue with the client can one reach a good result. Excellent architecture requires an engaged client just as much as it needs a talented architect.
What do you understand by the use of color in architecture?

Color obviously has the power to alter space in the sense that you can vary the impression of depth through contrast. In our London houses in particular we were able to transcend the limitations of their narrow structures through the use of color. Color affects the mood of a space as much as one’s perception of it. For us color is sensual. It is this connection to the kinaesthetic experience of architecture that ties our use of color to our interest in sustainable and rational design.

Why don’t you leave the question of color to the taste of the client?

We use color as an integral part of our architecture, integral to its concept. The design of space involves color as much as the more usual elements of light, volume and material. Therefore, when we develop our initial concepts, they include the idea of the color.

During the design process we refine the actual colors and work them out in detail. During this phase we work in collaboration with our clients to varying degrees, depending on the location, the program and the nature of the job. For example, at the Photonic Center in Berlin we had a very free rein. On the other hand the clients of the London houses were more involved, so that we developed the color scheme initially through a series of client meetings and ultimately on site with the client, where we tested the color areas at full scale and in the actual lighting conditions.

Do you work with color in a scientific or intuitive way?

The simple answer is: intuitive — but that doesn’t mean that it is not systematic! After coming up with the initial idea, we work with a quasi-scientific method of testing, so the decision process often takes a long time. As with any aspect of the design process, we make multiple simulations to study color using drawings and models. In that respect you could say that we work in a scientific manner, but the first impulse is definitely intuitive. There is no system that directs our choice of colors or color families.

What is the relationship between material and color in your buildings?

We are very interested in the relationship between color and materials. We are not creating spaces as purely visual phenomena, as does James Turrell, but spaces that are going to be used by the public or the clients directly. In that respect we enjoy contrasting the abstraction of colored surfaces with the tactile qualities of particular materials. On the other hand we often attempt to achieve a quasi-material quality in the color itself, through surface depth.

What about the use of color in combination with glass?

No contemporary architect can withstand the temptation of enjoying recent innovations in glazing technology and the numerous ways that these technologies can be employed in architecture. In the case of the Photonic Center it was interesting to observe the changes that took place as the outer layer of glass was added. We made many site visits to photograph the process before the final layer of glass was installed. I worried that the building wouldn’t look quite as beautiful when it was finished as it did during the process, so I was quite apprehensive when the outer layer of glass was eventually mounted. But with glass comes reflection. I enjoy the reflective quality of the Photonic Centre glass in particular because the amorphous forms, with their continuously varying curves, create reflections that are constantly moving as well. The fractured reflections capture parts of trees as an additional layer of the multi-layered façade, fostering interdependence between the building interior and its external setting. The space of the façade appears to be part of the site more than part of the building.

The decision to give the ends of the main building a “pastry-cut edge” had several significant results: firstly, lending a structural logic to its single-layered façade, which is folded for stiffness; secondly, exaggerating its contrast with the double façades of the main body of the building, no longer necessary at the entry; and thirdly, exploiting the discontinuous reflections to suggest a “forest space” through the ambiguity of dappled light and randomly placed columns (“trees”).

How does the use of color vary in your projects?

The way we use color on buildings is determined to a large extent by the nature of the context and our response to the site at an urban level, as well as by the client’s brief.
The GSW Headquarters, Berlin (completion 1999)

The use of color and materials reinforces the concept of creating an ensemble of five different buildings, including a 1960s office tower, to form a new urban composition. This grouping is intended to embody the various urban ideas that have given form to the site and its immediate context since the mid-18th century: the initial grid layout of streets lined with two-storey houses; the 19th-century densification building up to a 22-meter cornice line; the optimism of post-war rebuilding in the 1960s; the empty tract of land lying immediately to the north that reflects the scar of the cold war, which engendered a “dialogue across the wall” between the GSW and Springer high-rises in the former West Berlin and the Leipziger Strasse high-rises in the East; current ideas of inclusiveness and tolerance of previous built and ideological histories. The overall concept is one of collage, maintaining distinctions among the various building volumes. The existing building is modestly renovated to read “as found,” using colors and materials that recall those used originally, maintaining the 1970s replacement windows and external blinds. Two low-rise buildings are paired to form a base for the new slab. The long one marks the 18th-century building line at the two corners of the main street (Kochstrasse). Together this pair of dark earth-bound volumes of graphite colored ceramic tiles and punched windows recall the structures of the 18th and 19th centuries.

The new slab, by contrast, rests lightly on and seemingly floats above these low-rise volumes. Similarly its shimmering, reflective glass surfaces contrast the solid treatment of the volumes beneath. The façades reflect this building’s various spatial and functional demands in a deliberate and didactic manner. We exploited the west face, which has an environmental function, as the ensemble’s main venue for color. Incorporated within the double-skin façade, multiple sunshades in various hues of red form a dynamic painting at the scale of the city through ever-changing patterns created by the occupants, who manipulate the screens to serve their particular needs. The impulse to use a family of reds on the west façade was to contrast the greys and blue-greys of the Berlin sky.

If the west façade resembles a fur wrap, the east façade is a breathing skin with pores. It is dominated by a pattern of louver strips placed in a deliberately non-structural composition to illustrate how the air enters the building. The remaining façade elements comprise a tapestry of opalescent and clear glass, with silver venetian blinds within the double-glazed skin.

The slab is composed of three layers from east to west: the 330-mm-thick east façade; the inhabited layer of the building; the 1-m-thick west façade. The narrow north and south façades are independent of the long east and west façades. The volumetric layering is legible on the north face, which comprises a series of closely spaced vertical ribs that emphasise its verticality and narrowness. It is neutral in color, as is the south façade, where a series of closely spaced horizontal louvers provide maximum shading.

The final building element is the pillbox, which sits precariously atop the low-rise slabs. To contrast the heaviness of the ceramic tile base, it is clad in alternating stripes of corrugated metal and glass, which emphasize the continuity of its oval form. We stressed its "painted" nature by employing ridged horizontal metal bands in a range of green hues, to contrast the reds of the high-rise’s west façade. The "woven" quality of the surface supports the pillbox's surface continuity and formal "instability." The colors are modulated in relation to the context: the sunny side (towards the garden) has more turquoise, whilst the northern part (towards the street) has more golden-greens, relating to the gold of the Springer high-rise rising in the distance.
The Photonic Centre, Berlin (completion 1998)

For the Photonic Centre we "clad" the building with an abstraction of the spectrum in response to the activities within: research into light. The amorphous forms of the Photonic Centre contrast the rectangular buildings adjacent to the site, a difference that is reinforced through the use of color. The façades' continuously changing tones are independent of the building's internal organization, emphasizing the sense of instability. As a result the buildings seem to be "swimming" in their context. This application of color visually undermines the physical structure of the building. Color is applied to building elements, such as columns, to transform their nature, seemingly releasing them from their load-bearing duties through camouflage. Thus used, color thwarts the "seriousness" of such a "technical" building.

Because the site is quite restricted, one must walk close to the building, so that is it only viewed obliquely. There is no viewpoint from which one can understand the building at a single glance; one is forced to engage it in motion. To exploit the depth of the façade (similar to the west façade of the GSW-building), we colored the 70-cm-deep flanks of the paired pre-cast columns with a mineral paint through which one can see the structural concrete. The louvered blinds in the double façade provide an additional layer of color.

Experimental Factory, Magdeburg (completion 2001)

The use of color in the Experimental Factory differs from that in GSW or the Photonic Centre. Here we are not exploiting the depths of façades, but emphasizing their two-dimensional qualities by applying color deliberately to the surface of a "blanket" draped over the building. The over-scaled pop art qualities of the pink, yellow and silver stripes on the façade and roof have a very graphic effect when one is near the building, yet from a distance and under certain light conditions these colors begin to oscillate. The bold stripes emphasize the varied forms underneath the blanket, much as furrows in a field appear to heighten the local topography of the landscape.

The decision to make such a bold statement not only reflects the desire to articulate the "blanket" as a functional strategy (i.e. the grouping of heterogeneous rooms and functions), but also responds to the urban situation — the building's east face, where the blanket falls to the ground, providing the only distant view of the building as one approaches Magdeburg University along a fast main road that crosses the river Elbe.

The color stripes give the building a strong sense of identity, turning architecture into a logo, an instrument of marketing and communication, without degenerating into pure advertising. The run-down nature of the site and its immediate area made such a marked gesture both necessary and appropriate, whereas an inner city location would undoubtedly have been handled differently. Although a building should never overwhelm its context, this building signals the beginning both of the university campus and of innovative collaboration between the university and the private sector.
How do you translate your initial ideas regarding color into built form?

Throughout the design process we use different types of simulations — loose free-hand sketches or very accurate controlled perspectives. We use computer imagery to create photographic collages, but I still trust my hand more than anybody else's mouse. Although we make extensive use of models, we make the final color decisions in one-to-one tests on site, since the question of scale with the use of color remains difficult to simulate.

A very important factor for us is how color is specified. We are very keen on the Swedish NCS system; with this system you get actual paint-coated paper. It is not like something printed in a book; it is very direct.

How did your interest in color begin?

I think it comes from two directions. Matthias's father was a painter, so he grew up with colors in his father's studio. In my family there was nothing so direct, but I was also interested in the arts, visiting exhibitions and galleries. These interests became architectural when we started our practice in the late 1980s. Along with small residential commissions, we were entering competitions and preparing drawings for exhibitions. We began working on urban competitions with colored sketches and became interested in the relationship between 2-dimensional and 3-dimensional space, with reference to the work of Joseph Albers and El Lissitzky. We soon realised that our small building projects could provide an excellent testing ground for these interests. So you could say that our interest in color developed from the fact that we did not have much work at that time, enabling us to reflect on what we were doing and what we might do.
A series of invited speakers reflected diverse approaches to landscape. Landscape Architect James Corner, from the University of Pennsylvania, presented recent projects carried out in collaboration with architect Stan Allen that pose possibilities for the incremental development and growth of park sites over time, rather than finite design solutions. Their work engages the visceral experiences of landscape as a setting for urban life. In contrast, Architect Georges Descombes, from the University of Geneva, addressed the temporal dimension of landscape as part of an ongoing history, incorporating myth and memory. His minimalist approach draws upon the history of each site to elicit its potential for ongoing interpretation. Finally, landscape theorist Elizabeth Meyer, from the University of Virginia, discussed a particular thread of recent landscape discourse in the United States: the impact of ecology and land art on landscape architecture.

The issues addressed by these six studios ranged from general to specific, from cultural critique to the revitalization of specific sites. We investigated the historic, social and material dimensions of landscape at scales that varied from that of urban infrastructure to that of the individual human body. The studios explored a range of programmatic options: the sublime landscape of hydroelectric power generation; the contemplative landscape of death; the vitality of urban landscape and infrastructure; changing modes of production in the rural landscape; historic and cultural dimensions of landscape; critiques of contemporary cultural phenomena. Despite the range of issues and programs addressed by these studios, students in each group were encouraged to challenge preconceived notions about the architecture/landscape divide to address broader cultural and social phenomena inherent to architectural production.

Caroline Constant, Coordinator
The juxtaposition of industrial infrastructure and pastoral landscape has captured the imagination of American writers, painters, architects and poets. This fascination is evident in drawings, paintings and photographs and in the landscape itself, examples that serve both as icons of a new age and as historic symbols. Historically, infrastructure has often been recorded as an object of contemplation in the landscape, Leo Marx’s “machine in the garden,” as well as a frame that transforms the manner in which we view and inhabit the land. In contemporary society, infrastructure is valued more for its utilitarian qualities than its poetic potential, yet landscape architects, architects and urban designers are beginning to claim infrastructure as intrinsic to their particular discipline. They oppose any disengagement of infrastructure from their work in favor of treating landscape and infrastructure as components of a larger system.

Although infrastructure is often understood as vestigial space, recent landscape discourse has focused on its potential as a civic amenity. Many contemporary designers exploit this interpretation by redesigning, transforming or retrofitting existing infrastructure, such as solid waste treatment facilities, water pollution processing plants and telecommunication stations, to encourage public use and foster awareness of the processes that occur within.
This studio examined the potential reuse of the Ludington Pumped Storage Facility, a hydroelectric power plant in Ludington, Michigan, that will close in the next decade. The plant draws water from Lake Michigan into a large reservoir during off-peak hours to allow the water to power turbines during hours of peak energy consumption. While the infrastructure will likely remain, the plant will no longer contribute to the local economy and it will lose its function as an active expression of the region's cultural landscape. We investigated the cultural, social and historical relationships between the public and private aspects of the hydroelectric facility, its relationship to the local towns and larger region and its ability to revitalize the area. Student proposals elaborated on the potential of this vast earthwork by redefining its contribution to the region's cultural identity as well as the latent poetic value of its diurnal cycles of rising and falling water.
Turbulence Park
Brendan Canning

Infrastructural engineering often relegates landscape to the realm of the pragmatic, excluding possibilities of the fantastic. Such is the case in the Ludington Pumped Storage Facility. Ludington is a seasonal tourist town along the western coast of Lake Michigan. The coastline is replete with state parks that provide recreational and educational facilities along with habitats that foster diverse species of wildlife and vegetation. The power plant occupies a large expanse of prime lakefront property, disrupting this recreational and ecological continuum. This proposal accommodates energy production on the site and reclaims it for public uses. It transforms the existing facility into an infrastructure of utility and frivolity by introducing a spatial sequence that is both dependent on and derived from the existing infrastructural processes. To produce energy, water is pumped to the height of the earthwork, creating an artificial tide of nearly 100 feet. A series of terraces introduced within
this engineered palette transforms the earthwork into an exploratory landscape of visual and aural experiences. The terraces interrupt the flow of water, producing sequences of varying turbulence and exposing the current's volatile nature. The project merges the pragmatic with the fantastic by transforming the artificial rising and lowering of the tide into phenomena that are both educational and sensual.
Americans' interaction with the landscape has changed dramatically over the past century. With the development of the automobile, our society began experiencing its environment at ever increasing speeds, framed by the car window, the wiper blades, the hood and the rear view mirror. In essence, we have become armchair tourists in our own landscapes. We seldom expose ourselves directly to the weather; instead we travel from air-conditioned space to air-conditioned space in climate-controlled vehicles. Increasingly plush automobile seating substitutes for sensual experience and we drown out ambient noise with increasingly sophisticated stereo systems.

To challenge this passive tourism, this proposal amplifies the automobile experience of the Ludington Pumped Storage Facility, which stretches along three miles of highway just south of the city. From the road the facility appears to be a barren mound, devoid of vegetation, but the introduction of a vehicular route that skirts the rim of the reservoir allows an unprecedented understanding of the plant's mechanics. Views of the landscape are also transformed by an information-covered scrim that lines the entry route, serving as a new gateway to the region.
Patches, Corridors, Mosaics
Kelly O’Connor

The loss and isolation of habitat is an ongoing phenomenon of the modern world that landscape planners and ecologists must contend with to slow or halt reductions in biodiversity. Several dynamic processes contribute to this loss, including fragmentation, dissection, perforation, shrinkage and attrition. The Ludington Pumped Storage Facility has created a rift in the habitat that once supported and fostered a wide variety of flora and fauna. On a site that was originally a mosaic of farmland stitched together with hedgerows, the reservoir is a sterile abyss that inhibits the continuity of habitat across its girth. Rather than construct a new fabric, this project proposes to reinvigorate this landscape through a series of interventions and tactics that would take place over the span of a century. These patches and corridors will aid in restoring the site’s ecological connectivity by weaving together land, water, wildlife and people.
seeking new ground

Caroline Constant

Rebecca Raap, site analysis, Broadway Park
Miller owns this field, Locke that, and Manning the woodland beyond. But none of them owns the landscape. There is a property in the horizon which no man has but he whose eye can integrate all the parts, that is, the poet. This is the best part of these men's farms, yet to this their warranty-deeds give them no title.

Ralph Waldo Emerson

The eighteenth-century separation of the disciplines of architecture and landscape design has undergone no significant theoretical challenge until recent decades, when landscape returned to prominence as a potent embodiment of western culture. Several cross-disciplinary developments contributed to this phenomenon: from landscape architecture, an increasing awareness of the broad ideological forces inherent to the discipline; from the science of ecology, a recognition of the environmental issues that threaten our planet; from cultural geography, an understanding that landscape emerges from specific geographical, social and cultural circumstances; from land art, an emphasis on the conceptual, phenomenological and haptic qualities of landscape; from architecture, a renewed focus on the experiential continuum between building and context, be it urban or natural. As a result, landscape has become a fashionable analogy for much recent architecture — a phenomenon that should perhaps be looked upon with some suspicion.

Although landscape was not a theoretical focus of modern movement architects, the conceptual unification of the two domains distinguished the work of the most significant 20th-century practitioners. It exemplifies a current within early modernism that falls outside its polemical boundaries, yet evolved out of its utopian aspirations. The social utopianism that freed certain modern movement architects to conceive of landscape as a tabula rasa during the early part of the century gave way initially to a focus on the specific attributes of place. This phenomenon led ultimately to a cultural plurality that sanctions no single means to address the professional divide that marks the respective disciplines, recalling Emerson’s notion that landscape is the province of no specific individual but the poet.

This studio sought to challenge received notions of the architecture/landscape divide. It questioned how architects might engage history and social memory to inform the process of contemporary place making, to envision architecture’s contribution to the public landscape. Our investigation focused on a public site adjoining Ann Arbor’s Lower Town, Broadway Park, an underused fragment of an early-20th-century park system that is replete with diverse histories: geological; native American; early 19th-century agricultural, industrial and commercial development;

African American settlement and point of passage for the underground railroad; advent of the railroad. Although it was incorporated into the Ann Arbor park system in 1905, Broadway Park lacks the programmatic amenities of other parks in the system, be they natural enclaves or recreational sites, such as playing fields, hiking and biking trails, or boating and recreational facilities. Moreover, the triangular site is isolated by its physical boundaries (the Huron River, Broadway Bridge, and the Michigan Central railroad tracks), contributing to its ongoing reputation as "Hobo Park." To many area inhabitants, it is invisible. Notwithstanding its proximity to Ann Arbor's Kerrytown and Lower Town districts, its primary users remain the homeless. Thus, despite the rich history of its site, Broadway Park has consistently constituted a void in the urban fabric.

The early Ann Arbor landscape

The commodity value of landscape has been a motivating aspect of Ann Arbor's existence since its founding in 1824 by two eastern entrepreneurs, John Allen and Elisha Ramsey. The pair named the village "Annarbour" to acknowledge the locale's generous stands of burr-oaks and the common name of their wives, as well as to serve as a beacon to prospective settlers. The village occupied a well-forested site in a hilly region of terminal moraines, chosen for its natural resources. If this region had once been wilderness, it had already been tamed by the forces of nature, according to Allen's account of village attributes:

"Our water is of the purest limestone, the face of the country moderately uneven, our river the most beautiful I have beheld, and abounding with the most valuable fish, climate is as pleasant as 'tis possible to be, the river has not frozen entirely up this winter, the weather is as fine at this time as I have been accustomed to in April."

In addition, Allen described farmland "which nature has provided already clear," roads "in various directions" and "mills of every kind."² The village was designated a county seat, and the founders provided a square with a courthouse and jail. In 1828 they erected a bridge over the Huron River at the crossing point of the Potowatami Indian trail, the predecessor of the Broadway Bridge that delimits the western edge of the site.

Lower Town

Within a year of the platting of Ann Arbor, settlers began to claim property in the low-lying terrain to the north, directly across the Huron River Bridge, in a competing settlement known as Lower Town. The primary force behind Lower Town's early development was Anson Brown, a worker on the Erie Canal who settled in Ann Arbor in 1825 upon completion of that vital transportation route. He envisioned a vibrant urban area, exemplified by the names he gave its principal streets, borrowed from those in Lower Manhattan: Broadway, Maiden Lane, Canal Street and Wall Street. Recognizing the Huron River as a potential source of energy, Brown obtained water

rights and dammed the north side of the Huron River to power a flourmill, Swift and Company. He constructed a row of business buildings at 1001-1007 Broadway that contrasted the residential character of Ann Arbor's early buildings. Brown's untimely death in 1834 prevented his dreams of a vital urban presence for Lower Town from becoming a reality.

Industrial uses, including the Michigan Central Railroad (from 1839) and various milling operations, continued to flourish along the banks of the Huron River throughout the 19th century. By the early-20th century, however, the Plains States began to dominate agricultural markets, and in 1905 Detroit Edison Power Company began buying land and flow rights along the Huron to replace the existing mills with hydroelectric power plants and a series of dams. By 1927, this technology was in turn supplanted by more economic means of meeting the town's increasing energy needs, and the company abandoned its plans for further dam construction. The capitalist exploitation of natural resources in the Huron River valley had resulted in considerable degradation of the natural environment.

Broadway Park was originally envisaged to rectify the appearance of the triangular plot of land, originally platted as a zone of working-class houses and small-scale industries, which had become, with the advent of the railroad, an unsightly coal yard. To improve the view of the Huron River from the adjoining railroad depot, imposingly rebuilt in 1886, a public petition of 1902 urged the city to purchase the property to provide a more suitable gateway for the city's numerous visitors. Since it served no other use, this effort to "beautify" the site paradoxically rendered it a void in the civic fabric. This effect was exacerbated when the street system, which originally extended into the site, was disrupted by the elimination of level crossings and the elevation of Broadway Street to a viaduct over the railroad tracks, curtailing vehicular access to the site.

**Ann Arbor Park System**

Broadway Park owes its present appearance to a series of early-20th-century developments that placed a new emphasis on the supposed moral, educational and promotional virtues of the city's natural environs. It reflects a significant shift in which the pastoral, restorative value of nature came to be valued over its commodity value. This new paradigm presumed that the local populace would overcome the supposed vicissitudes of urban life through direct experience of reconstructed "nature."

Broadway Park is a fragment of Ann Arbor's linear park system that includes Fuller, Riverside, Island, Argo and Cedar Bend Parks. In 1905 the city established the Parks Commission, which acquired two hundred acres of land along the Huron River. They sought the advice of Ossian Cole Simonds, a Chicago
landscape architect who promoted a regional approach to Midwestern landscape design by planting native species throughout his parks. His Huron River park proposal reflects his interest in preserving the area’s natural amenities:

> Every city should try to secure for posterity an attractive native woodland. It is not so important to develop the park by introducing carefully kept lawns and flower beds, but it is important to retain the native growth. No landscape gardener can plant as well as Nature has planted.

Rather than spend money on planting, therefore, Simonds argued that the city should develop a network of scenic walks and drives to provide river access. His philosophy of landscape design extended to issues of maintenance as well as detail:

> It is unnecessary, for instance, to mow the hillside.... It is unnecessary to dig a hole around a tree for a little pool of water or to introduce any other trivial feature intended for ornamentation. Bog gardens, lily ponds, etc., may be very properly introduced in time, but first let us make the drives and walks that are necessary and before introducing any feature let it be carefully considered.

Yet Simonds’s primary concern was to maintain the scenic qualities of the park system:

> It seems to be exceedingly important that you should acquire the land along the opposite river bank so as to prevent the destruction at any future time of the large and beautiful trees that now grow on this bank and add greatly to the beauty of the scenery.... What I wish especially is to ask the Commissioners not to work on things that will not be of permanent value or things that are liable to be changed or discarded.\(^3\)

The city took Simonds’s advice and focused on construction of walkways and roads, resulting in a new, but conflicting image for Ann Arbor’s urban landscape, a notion of the City Beautiful that grew out of Chicago’s World’s Columbian Exposition of 1893, planned by Daniel Burnham and Frederick Law Olmsted. In 1914, the Ann Arbor Civic Association in conjunction with the University of Michigan commissioned a report from the Olmsted Brothers for “a plan by which the city may develop as a city beautiful.”\(^4\) The Olmsteds proposed to revamp the street system and called for a city zoning policy to balance the conflicting interests of university expansion, industrial growth, land development schemes and residential priorities. As a result, the City Council adopted Ann Arbor’s first zoning ordinance in August 1923.

Subsequent development of the Ann Arbor park system centered around two diverse aims: providing recreational facilities and extending natural reserves. Because Broadway Park fulfilled neither of these objectives it fell into disuse, except for the homeless who continue to frequent the site. Moreover, despite the rapid growth Ann Arbor sustained during the last century, Lower Town remains an underdeveloped resource in close proximity to the heart of the city. Just as Lower Town’s proximity to Ann Arbor’s Kerrytown Market district indicates its potential for real estate development, so, too, improvements to Broadway Park might provide an added incentive for a revitalized civic presence in Lower Town.

**Studio work**

Student research into various aspects of Ann Arbor history exposed certain prevalent myths concerning the Midwestern American landscape, including the capitalist view of nature as a force to be controlled and exploited for human consumption and the pastoral view of nature as an idyllic antidote to urban life. Additionally the site, seemingly “natural” in appearance, was revealed to be a human construct.

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\(^3\) O. C. Simonds letter to the Ann Arbor Park Commissioners, 30 June 1905, transcribed in www.artsofcitylife.umich.edu/sos/topics/parks/sosimonds.html.

Student proposals explored various themes: the temporal aspects of landscape, in strategies addressing incremental development and growth over time as well as more finite design solutions engaging diurnal and seasonal dimensions; the palpable experience of landscape as a setting for urban life; tensions between pastoral and mechanized approaches to landscape; the idea of nature as an ever-present force that animates the physical world.

The site posed two major problems, difficulty of access and lack of destination. Student responses ranged from amplifying the isolation of the site to reforging connections with the urban infrastructure and the park system, while giving it a distinct character within that system. Proposals drawing on the inherent isolation of the site included: canoe shelters providing access at strategic points along the Huron River; vantage points constructed to provide means of appraising the site from a distance; a series of sites for meditation. Programs addressing access included a combined parkway and parking structure and distinct access systems for pedestrians, bicyclists and automobiles. Projects developing a specific character for the park included: a garden reflecting historic permutations of the site, whose overall layout reflects its 19th-century platting; a water park along the millrace that draws upon the earlier industrial use of water; an exercise park conceived of as a fragment of the broader park system; an “exploration ground” drawing on visceral experiences of an industrial waterfront; an urban park, devised to enhance the seasonal effects of water, such as rain, runoff, ice and snow; a viewing platform directed toward a field of towers that reflect variations in barometric pressure, thus rendering the invisible visible.
Exploration Ground
Dennis Ng

Broadway Park is to a great extent a byproduct of industrial endeavors. To beautify the site, the city constructed a vale over this industrial wasteland, creating a palimpsest of the industrial age and the "Park Beautiful." This act, coupled with the failure to provide amenities or a sense of destination, made the park desolate and inactive. To reanimate the site, this proposal fosters exploration of its historic roots through a direct appeal to sensual bodily experience.

Steel is used as a medium to elevate the visitor's experiences of the river. At the water's edge a pair of over-scaled steel plates cause the river to speed up or slow to a standstill. The experiences fostered by these plates grow out of their contact with the water and the ground plane. They are partially embedded in the ground and partly cantilevered from it, angled to be horizontally unstable. As the visitor approaches the cantilevered segments of the plates, the steel begins to deflect and resonate, echoing the effect of the flowing water. The plates create cavernous spaces toward the land that isolate visitors from views of the river, enabling them to focus on its smells and sounds.
Inaccessibly located between a fast-paced bridge, a railroad line and the Huron River, Broadway Park is by no means natural. Nevertheless, the site is a crucial link in the Huron River Greenway. It should function as both a component of the park system and an independent destination. To take advantage of its strategic location between two urban conditions, Ann Arbor and Lower Town, this highly constructed urban park comprises a distinct component of the Ann Arbor park system. The design is multi-functional, promoting use in all seasons by engaging the multiple attributes of water. Its landscape juxtaposes living, organic materials to hard, man-made materials so as to explore the potential of flooding, run-off, drainage, ice and melting snow. These various elements bring vitality to the site and encourage individual experience and social interaction in any weather.
Instruments for Viewing the Landscape
David Sheerin

The development of Ann Arbor since its founding in 1824 manifests shifting perceptions of nature and the landscape. If the early history of Ann Arbor demonstrates the Newtonian view of nature as a rational and predictable machine whose power can be harnessed toward the collective good, the town's subsequent development exemplifies a pastoral view of nature, whose bucolic splendor can promote the health and welfare of society. This design seeks to reveal these shifting perceptions of nature by creating a landscape that is at once both mechanical and pastoral.

Two elements are situated on opposite sides of the Huron River. On the Lower Town side a seemingly irregular array of tall "barometers" draw water from the Huron River to measure atmospheric pressure and register this pressure through the rotation of metallic armatures. On the Ann Arbor side an observation post enables visitors to read the positions of the barometers in a more deliberate way: when fair weather is imminent, the barometers form dynamic and playful rhythms as the observer's sight recedes into the landscape; prior to precipitation, the barometer arms lower to frame the distant horizon. As an instrument for viewing the landscape, the observation post provides the participant with an intimate connection to broader environmental conditions or phenomena.
I LIKE TO WATCH:
Politics and Cultural Landscapes of Strangelove and Chance, or Lessons from a “Machine in the Garden”

coleman a. jordan (ebo)

Design as a research proposal and implementation can be called interrogative when it takes a risk, explores, articulates, and responds to the questionable conditions of life in today’s world, and does so in questioning manner. Interrogative design questions the very world of needs of which it is born. It must respond with a double urgency to such a world. First, it should function as an emergency aid in the process of survival, resistance, and the healing of social, psychological, and physical wounds. Second, it needs to increase and sustain the high level of ethical alertness that creates, in the words of [Walter] Benjamin, a state of emergency understood not as an exception but as an everyday ethical condition, an ongoing motivation for critical judgment toward the present and past to secure a vision for a better future.

Krzysztof Wodiczko

It is necessary for “the education of an architect” to take hold of and practice what Krzysztof Wodiczko calls interrogative design. The educational process and practice of architecture rarely utilize interrogative design and too often ignore or minimize critical social issues. Architecture’s omission of these social issues perpetuates irresponsible design and urban development. Academe is often consumed with projects that patronize, offend or misrepresent under-represented communities through traditional design conventions that are disconnected from these communities. By repeatedly failing to question issues of power and control, architects overlook opportunities to analyze and expose the inequalities that underlie our social and political environment. As Leslie Kanes Weisman states, “the spatial arrangements of our buildings and communities reflect and reinforce the nature of gender, race, and class relations in society.” In such a context, non-responsive or non-interrogative design lacks “ethical alertness” and contributes to “the power of some groups over others and the maintenance of human inequality,” as Weisman stresses. Can architects use design as a tool to interrogate our culture and formulate social critiques?

This studio posed the issue of interrogative design, asking students to formulate a thesis by means of research proposals and spatial analyses of everyday cultural landscapes.

"I LIKE TO WATCH": Politics and Cultural Landscapes of Strangelove and Chance, or Lessons from a "Machine in the Garden" combines film analysis with analysis of the built, un-built or imagined environment as a means to interrogate undercurrents of power and control in our society. The films used for analysis were: Stanley Kubrick's 1964 masterpiece, Dr. Strangelove, Or: How I Learned to Stop Worrying and Love the Bomb, a satirical, provocative black comedy/fantasy regarding doomsday and Cold War politics and featuring an accidental, inadvertent nuclear attack; the 1979 classic Being There, directed by Hal Ashby and based on a screenplay by Jerzy Kosinski, which poses the question "What is an American?" In Being There, the main character Chance, an illiterate gardener, is accidentally mistaken for a genius. He becomes hailed as the country's hottest politician and desired as its sexiest male amid the "Videot" culture that thrives on manufactured images and fantasies of power. Both films critically analyze and expose our social and political environment and question the undercurrents of power and control in relation to such aspects of identity as race, class, gender and sexuality. Taking the concepts of "machine" from the former film and "garden" from the latter, the studio reinterpreted the title of Leo Marx's landmark book in the context of contemporary cultural landscapes.

Introducing the unfamiliar "risk": the MACHINE

machine n. 1 apparatus using or applying mechanical power, having several interrelated parts. 3 controlling system of an organization, etc. (The Oxford Pocket Dictionary and Thesaurus, 1997).

The idea of a machine is analogous to the masculine connotations of the films used in this studio, which engage in critiques of American masculinity. The word machine has obvious masculine connotations. It is power-driven and controls its own function and outcome; hence it connotes a "controlling system." In Dr. Strangelove we see masculine power and control exercised over nations and humanity. The actual and imagined machine is an extension of what "man" is capable of — DESTRUCTION. The bomb brings about the total obliteration of land and society. In Being There we see man as machine, a dumb, TV-generated object/human. Chance is designed and manufactured by man's own videot environment. Being There is a scathing critique of the 1970's popular and political culture, which Kosinski envisions as projecting America's millennial destiny.

Students' interrogative design projects took on fictitious, cinematic texts and their historical contexts as springboards for generating arguments about social issues concerning present design and architectural practices. Each student created a contextualized, interdisciplinary-sited machine (the unfamiliar) to communicate his or her development of a constructed language of architecture. The studio used machine as a metaphor for a designed and constructed object/apparatus powered by or performed through human intervention and, in turn, posed it against an environmental landscape; thus the "machine in the garden" is a concept analogous to our objective. As a design tool, the machine removed the student from the familiar context of architectural design (i.e., a house, an institutionalized structure or general form making) to interrogate aspects of design based on thematic notions of culture (gender, race, class, sexuality, etc.).

The Game of Shifting Perspectives
Anthony Harris

This collage examines and represents issues of inequality, social background, cultural and social landscapes and perspectives by layering personal narrative with "social-historical locations."

De-objectifying the Body
Michelle Mack

The project entails a critique of the cultural landscape of the body as viewed through the camera lens. Supported by research into the psychology of alienation and ostracism, the body is presented as a fragmented landscape to be viewed and manipulated. This interactive machine provokes users' reactions to our cultural environment by challenging issues of diversity, bodily comfort and social mores.
Arbitrary Identity
Michael Bonick

There is no necessary connection between the sign vehicle and the sign content; linguistic signs are purely arbitrary.

Ferdinand de Saussure

The meaning of an object is arbitrary outside the limits of its physical context. In other words, a change in surroundings invariably modifies the meaning of the object that has been displaced. Furthermore, the identity of objects passing through a cyclical landscape is arbitrary by virtue of their transitive nature.

This project challenges our own identities, as signified by proper names. A machine sited within a threshold is a tool for renaming an individual passing through it; this renaming takes place through actions of both the individual and a group on the other side. Following a set of instructions the group spins three wheels of letters in order to construct the identity of the newcomer. The qualifying aspects of the instructions are based on physical, visible characteristics such as the individual's height, weight, hair length and skin color. Through a random spinning of the wheels, these non-arbitrary inputs produce arbitrary letters that comprise the person's new and wholly arbitrary identity. This process is analogous to conventional naming processes that occur in the English language.

Corset Space
Nikki Ross

If we think about boundaries from the point of view of the new sciences, the boundaries of our bodies are not edges of three-dimensional containers into which we put certain things (food, air, and water) and out of which other things emerge (food and water wastes, air, blood, etc.). The boundary of my body should rather be thought of as an event-horizon, in which one form (myself) meets the potentiality for transforming itself into another form or forms (the not-self). Such a body-boundary neither entails containment of internal forces nor repulsion of/protaction against external forces. Those who are aware of themselves as centered "inside" an insulated container — free from contamination by the threatening other which is located "outside" [—] are captured by an illusion generated by the mechanisms of ego-protection, as well as by spatial models inherited by a classical science which is now outmoded.

Christine Battersby

Christine Battersby argues that the Western concept of body as container is masculine in nature. The feminine body is not constructed as a container, but is defined by the boundaries constructed around the feminine body. In response to Battersby, this

project interrogated commercial landscapes of feminine images and values, as reflected in advertising images, in relation to historical concepts of the feminine form. Specifically, the project focused on the advertising campaigns of Virginia Slims cigarettes, in which the abstract values promoted by the advertisements diverge from the physical consequences of smoking.

The project is a construct of the feminine body, represented by the dissipative energy of a light bulb, which is constrained by the boundaries of the corset within which it is placed. The torso is a translucent construct shaped by socially constructed masculine values upon which tobacco advertising slogans are etched. At first glance, the light appears to illuminate the ideal feminine form, but upon closer inspection it is revealed to represent the adverse health consequences inflicted on the physical form as a result of product consumption.

**Gestural Catalogue**

Greg Pinter

If our planet has seen some eighty billion people, it is difficult to suppose that every individual has had his or her repertory of gestures. Arithmetically, it is simply impossible. Without the slightest doubt, there are far fewer gestures in the world than there are individuals. That finding leads us to a shocking conclusion: a gesture is more individual than an individual. We could put it in the form of an aphorism: many people, few gestures.


The machine presented here allows the user to construct a chair, a table, a bookshelf, a desk, etc., to fit his or her momentary needs. Over the course of time the machine creates a catalogue of gestures and postures associated with various types and forms of furniture. This architectural framework symbolizes our external posturing, while the recorded gestures capture the unique qualities of an individual’s response to it. The ease of these gestures, their “matter-of-factness,” is recreated through everyday experiences of and interaction with the architectural device. Thus, this machine fosters an awareness of preexisting socially correct gestures and postures as composed and supported through everyday cultural landscapes and objects.
Through the program of a fish hatchery for Ann Arbor's Gallup Park, this studio explored the relationship between architecture and landscape by interrogating both *landskip*, the appropriation of landscape as a pictorial, potentially distancing operation, and *landschaft*, the understanding of landscape as a series of intimate territorial relationships that facilitate patterns of occupation and use.¹ The agents for this inquiry were the program — a hatchery for producing and manufacturing fish — and a landscape ideology based on the pseudo-science of fly-fishing. Fly-fishing's analogous mix of unapologetic intuition and suspect facts (i.e. having the right fly, the correct water conditions, the perfect cast and an explicit abundance of leisure time) provided fodder for our thinking about landscape and its potential liberation from "not architecture."

The pictorial understanding of landscape directs one's glance not to an object, but to the totality of scene, so that sight itself becomes the object of one's awareness. This dislodges landscape from its useful qualities and isolates it as an intellectual endeavor. As Jørgen Dehs argues:

> When landscape comes into aesthetic honor and dignity as a symbolic representation of nature as a whole, it is not within the perspective of the farm worker. The aesthetic enjoyment of nature is a privilege for the bourgeois individual, who is removed from nature in his everyday life. When we disregard the farm worker, landscape doesn't relate to our actual existence.²


The studio’s effort to distance ourselves from the static visual nature of landskip lay in the realization that, as part of our cultural situation, theoria, or the essential coherence of things, has for the moment, lost its object.

Students embraced the notion that while landscape is indeed tied to “vision,” it is also linked with physical reality — a state of existence that seems to scientifically and culturally evaporate as quickly as it condenses. Because this “reality” is in flux, so is the unity of landscape. Thus, to farm or cultivate design strategies, this studio adopted a position wherein the unique was no longer privileged as the point of departure. Instead, what was unique was the individual process of constructing that reality: a produced landscape.

The students developed operational strategies that championed landscape as a dynamic activity — a verb. We began by investigating perhaps the most iconic representation of the sport fishing landscape: the fishing fly. Each student chose a fly, or a pair of flies, based on their ability to lure either someone or something. Students analyzed their flies and, more importantly, the circumstances of their selection, both graphically and verbally. We sought relationships of engagement that could be expounded upon at multiple scales and directed toward different programs, sites and materials. The fly’s ability to operate as a lure toward the cultivation of landschaft was the hermeneutic goal.

Students engaged the idea of landschaft in radically different ways, developing both personal and social logics for their rhetorical and actual landscapes. Intention, interpretation, certainty, revelation and drawing as agents of architectural pragmatics were the studio cornerstones. The following six projects represent a cross-section of our ventures.
Amy Milobowski

Circumventing the conventional approach of a program "applied to a site," Amy Milobowski developed an understanding of landscape by representing and instrumentalizing the sense of program itself. She interceded on a performative level, and not simply an organizational one. By continuously reworking the idea of an image and its latent associations (landship) she generated a tectonic landscape of production. Scale, composition, proportion, sequence as well as the notions of progress and maturation were her operatives. These systematic and coincident operations resulted in carefully constructed drawings that operate as both evidence and speculation. They become the site: the language — the landscape — the hatchery.
Amanda Spicuzzi employed geometric surveys as tools to link her geo-sympathetic ideological premise with the site as a physical, knowable and malleable organism. She inserted an elevationally specific “plane of production” designed to acknowledge the fragility and instability of the adjoining wetlands site. A tectonic lattice of multiple scales accommodates the programmatic functions of the hatchery while amplifying subtle changes in the seasonal water tables and shifting earth. Accessibility to the plane’s surface and its production facilities varies according to the natural cycles of the site.
Gideon Danilowitz

Gideon Danilowitz's project champions the circumstantial landscape. The roots of its production lie in his release of overt architectural intention in favor of cultivating a hyper-awareness of intuitive association. Landscape is what you make [of it]. Only evidentiary elements remain after the presentation/performance of the produced work. The most prominent remainder in this case is a woven metallic ribbon that "surveys" a bank of the Huron River. This ribbon is deliberately perforated to accommodate or edit selected "natures." It is a foreign element, trapped between site specificity and site denial, explanation and indifference, agitation and revelation.
Kyoung-Hee Kim

Taking advantage of seasonal correspondences between the hatchery program and the natural environment, Kyoung-Hee Kim produced an ephemeral landscape of production. Aware that the hatchery is not necessarily in use for the full calendar year, Kyoung-Hee proposed to deploy temporary nets and floating sieves into the Huron River during hatching operations. The nets distance the production space of the explicitly "manufactured natural" — the fish — from the "simulated natural" landscape of the park grounds. When the hatchery operations cease for the year, the nets are removed from the river to be used as public park amenities. This project engages issues of artifice and reality to further divorce "landscape" from a purely visual phenomenon.
So Eun Cho

Seeking to intensify recognition of the site’s designed landscape at the scale of a pedestrian, So Eun Cho proposed an autonomous sampling of the landscape characteristics as part of the Hatchery education center. Inspired in part by the 18th-century cabinet of curiosities, So Eun’s scheme promotes the phenomenal, rather than the actual, encounter with the site by isolating and distilling its palpable and intuitive traits, then altering its scale, surface characteristics and natural adjacencies in a series of rhythmic “rooms.” This series of spatial textures presents “landscape” as a condition of multi-sensory experiences, rather than a singular object of visual contemplation.
Sang-Boem Kim

Sang-Boem Kim brought a long-standing interest in what he calls “gray space,” or architecturally ambiguous constructs, to the idea of landscape. Through a series of tenuous park and hatchery amenities—a wall, a restroom, an orientation space, etc.—he sought to enhance the fullness of the experience of the site. Using multiple layers of opaque, reflective, translucent and transparent surfaces, Sang-Boem selectively edited and revealed the consequences of our perhaps unintentional participation in the public landscape. Our ability to converse and cavort with one another and to survey “the scene” are alternately frustrated and facilitated by interaction with these uncertain structures.
OVERHEAD/UNDERGROUND

A STUDY OF LANDSCAPE AND INFRASTRUCTURE IN TORONTO

Elise Shelley

In the urban realm, landscape is often rendered illegible by the density of the built fabric and infrastructure has lost its role as an integral component of civic form. This studio explored the concept of infrastructure as a structurally significant component of the city, capable of contributing aesthetically, spatially and functionally to the urban landscape.

The meaning of infrastructure has broadened significantly from its original reference to engineered structures and systems at a local scale, to a global understanding of built or virtual networks. Historically, infrastructure consisted of public works — urban structures and landscapes operating at the civic scale — that contributed to urban vitality. The design of such systems consciously incorporated multiple functions and scales, integrating regional needs with local networks, thus imbuing public spaces and landscapes with cultural significance. Yet today the density and monolithic zoning of modern cities either renders infrastructure invisible or compromises its role in the public imagination as an integral component of civic form. This studio proposed to recover the concept of infrastructure as both functional landscape and civic gesture, capable of contributing to the aesthetic and spatial renewal of the broader urban landscape.

To understand the diminishing aesthetic value of civic infrastructure, students examined the history of Toronto, Ontario, where the increasing scale of infrastructure has fragmented the urban core. Over the last hundred years, the city’s downtown center has become isolated both physically and visually from its harbor on Lake Ontario. This isolation resulted from the advent of large-scale transportation networks serving sea, rail and automobile transport. The impact of inland rail and water transportation systems, originally developed to serve the shipping industry, was exacerbated by the addition of regional arteries oriented toward automobile and truck traffic. Instead of being perceived as civic infrastructure, these new systems form barriers that truncate streets, isolate green spaces and restrict pedestrian movement. The imposition of these systems without consideration for local scale or function leads to a negative understanding of infrastructure, diminishing its capacity to operate as a positive component of urban form.

To recover the potential of new networks as civic infrastructure, this studio investigated public works at various scales to reconfigure the relationship of Toronto to its harbor. Local interventions accommodate a variety of public activities and services, while interventions at the urban scale reorganize existing systems to reestablish Toronto’s harbor front as an integral part of the metropolitan core.
TOPOGRAPHIC SYSTEMS

Early studies of Toronto's topography and geologic history formed the basis for projects that manipulate landform to create new spatial conditions. Furthermore, the city's history of engineered landfills along the waterfront suggests the malleability of earthwork and the potential to use ground as a medium for construction.

Strata Orientation

Urban Toronto exists on a series of infrastructural levels or layers. Visible systems include railroad bridges, the Gardiner Expressway, streetcar rails and vehicular circulation routes that lie atop the subway and underground PATH network of walkways lined with retail shops. George Konidis proposes the dispersal of a system of prototypical vertical "light-shafts" throughout the downtown core to create an identifiable system of connection and orientation. These shafts reconfigure circulation between the layers by manipulating adjacent ground planes and appropriating site-specific programmatic elements. This standard structural component is flexible, allowing the prototype to be site specific while addressing issues of local function and urban identity.
HYDROLOGIC SYSTEMS

The hydrological conditions of Toronto’s glacial landscape sculpted a system of ravines that stitch various urban neighborhoods to the harbor. At the same time the harbor front has been repeatedly reconfigured by urban infrastructure serving the shipping industry. Projects sought to link the natural systems and the engineered systems by using this topographic anomaly as a point of departure.

Stormwater Landmarks

Fronting Lake Ontario is a zone of landfill that contains the infrastructure that segregates the city of Toronto from its harbor. By exploiting the constructed nature of this edge, Kevin Myshock’s proposal reestablishes historic, environmental and programmatic connections between the harbor and the downtown core. A series of water treatment basins reflect the history of the site as a landfill, effectively linking site memory with functional processes. Pedestrian routes and storm water flows are linked through a series of bridges, walls and boardwalks that structure water channels and provide access to the lake.
Dynamic Interface

Joanne Behrens's project extends Toronto's harbor inward to negotiate the isolation of the urban core from the water's edge. A "zippered" interlock of programs, buildings and public spaces integrates land and water activities, creating an expanded edge condition to prompt redevelopment and revitalization of the harbor. These circulation and transportation systems generate growth and expansion by repopulating a new city edge.
MOVEMENT SYSTEMS

Toronto's urban core is the hub of an extensive regional transportation system that serves pedestrians and vehicles both above and below ground. The complexity of existing movement systems suggests a need for reorientation and reconnection of infrastructures to rationalize movement networks throughout the city.

New PATH(way)

Lack of interaction between Toronto's above- and below-ground networks limits awareness of and access to the city's underground circulation system. Pedro Melis's proposal bends and folds the ground plane to penetrate the urban surface and inject light and activity into the underground PATH system. Manipulating the ground plane establishes visual connections between circulation systems at both levels to signify arrival, create entry thresholds and clarify orientation.
(Sub)way-finding

Toronto's extensive underground network of subway lines, pedestrian paths and commercial strips distort and dilute the understanding of the city. To alleviate the disorienting effects of being submerged underground, Merlinda Song's project introduces a new type of "distribution center" that focuses on the retrieval and dispersal of information within this circulation zone. Physical distribution of people, services and goods is accompanied by access to virtual information systems through the internet and world wide web. This project suggests a prototype for development within the underground system that creates elements of identity and orientation at a local scale, but with regional and global impact.
Beth Cady, mapping of the religious, death and recreational landscapes in Detroit
Ritual landscapes

Gretchen Wilkins

Rituals surrounding death and dying are embedded in understandings of landscape, be they cultural, religious, geographic or architectural. The mythologies that inform everyday life are inseparable from those of death; similarly, the way the dead are treated reflects cultural, social and religious beliefs in life and afterlife. If architecture can be understood as a participant in the rituals of death, landscape is the site that embodies and facilitates those rituals. Together they comprise a ritual landscape, which reflects the traditions, programs and issues inherent to death while serving the collective body of the living.

This studio engaged issues surrounding death and dying at scales and in contexts varying from those of the physical body to those of the urban landscape. At the root of these explorations was an analysis and redefinition of rituals of death relative to commercial, industrial, urban or other institutional values. Each student undertook research into various cultural and religious attitudes toward death, which they interpreted for a site within a particular American cultural and historical context — the post-industrial landscape of Detroit, Michigan.

The site is the former location of the Jeffries Homes West, a housing project built in Detroit during the 1950s to house the immigrants who came to work in the auto industries. Of the original thirteen towers, only four remain, of which three have been renovated and the fourth is slated for demolition. This site, chosen for its complex history, current evacuated condition, diverse boundaries and urban adjacencies, suggests multiple opportunities for intervention relative to the student research.

To address this site, the students confronted the American "infrastructure" of death, those public and commercial industries that provide services for the public upon the event of death. These industries, which include cemeteries, crematories, morticians, florists, musicians, etc., provide what is conventionally known as the "necessary" arrangements that enable rituals surrounding death to occur as orchestrated public events. These may not be limited to the individual's family and friends.

1 Rituals of death vary culturally and geographically. This studio focused on these diverse rituals in the particular context of the United States, which are usually subject to these conventions and industries. The
but can also occur at the scale of “necro-tourism” in cemeteries such as Père-Lachaise in Paris (which statistically contains the greatest number of famous people per square mile and is visited by two million tourists each year), Mt. Auburn in Cambridge or the necropoleis of Pompeii, Herculaneum and ancient Rome. The relationship between life and death in these cases is not one of opposition, but renders indistinct historic distinctions between metropolis and necropolis, museum and mausoleum. The work in this studio challenges the program of death by engaging the site’s cultural, historical and architectural potential, resulting in projects that deal with death physically and/or socially in the urban realm. Death is not understood solely as a point of finality or absence, but equally as an occasion for leisure, learning and/or remembrance.

Students researched specific cultural, religious, geographical or historical attitudes towards death at three primary scales: that of the physical body, which can be prepared, viewed, paraded, burned, embalmed, buried, sacrificed, wrapped and/or ritually exposed; that of the familial body, which consists of relatives, friends, co-workers and acquaintances; that of the public body, which comprises those who organize, regulate, profit from, maintain, service or otherwise participate in practices structuring the death and funeral industries. The implications of these traditions for landscape and architecture were framed relative to these three scales, fostering a broader discussion of the relationships between ritual and public space in a variety of contexts. The culmination of this work resulted in student proposals elaborating on these ideas spatially, materially and programmatically.

Event of a funeral, with all of its attendant customized merchandise and services, has secured death as a growth industry in the United States, where it reaps $12 billion in annual sales and the average cost of a funeral and burial is $10,000.
Site Momentum
Matthew Stark

Detroit's history is as visible as its future. Physical remnants of abandoned or obsolete buildings and infrastructure are scattered throughout the city, alongside occupied housing and commercial development. The former site of the Jeffries Homes is a microcosm of this urban phenomenon, where piles of rubble from imploded housing towers are edged with newly poured curb cuts and paved driveways, the preliminary infrastructure for the site's next life as Woodbridge Estates. Traces of provisional recreation, storage and housing constructed from "found" objects on the site attest to the temporary and anonymous use of this transitional landscape.

This project, grounded in research into Tibetan Buddhist cycles of life and rebirth, explored spatial momentum through traces of the site's past, present and future "energies." Mausoleum walls embedded in its manipulated topography organize spaces for circulation, burial and reflection. Water is introduced as a datum, a horizontal line that separates the everyday landscape from the memorial landscape.
Oral Gardens
Kourtney Baldwin

The first implosion of the Jeffries Towers took place in 1997, and demolition has been carried out sporadically ever since. Although remnants of these historic structures remain on the site, their erasure contributed to the depletion of the rich oral history of this locally famous housing development. The evacuation of these buildings brought an eerie silence to the site, through which only an occasional visitor now passes. Oral history passed down from generation to generation is possible only through the presence of people, a presence the site does not currently offer.

Based on a study of the oral traditions of African religions, this project proposes to both reveal the site's oral history and activate its future histories through the design of an urban park. The park contains parking for the adjoining church, community and allotment gardens and neighborhood recreation space. The garden commemorates the site by recording its oral histories on semi-transparent garden walls. The presence of the community gardens encourages neighbors to lavish attention on this otherwise forgotten landscape, and in so doing suggests reactivation of the site's ongoing history through the increased presence of residents and visitors.
Memorialization in Life
Beth Cady

Landscapes of death are often quiet places of solitude that are visited momentarily and sporadically. Over time, as friends and family of the deceased move on or pass away, or as memory recedes, the burial markers become anonymous and are eventually reclaimed by the ground. This project rethinks contemporary forms of memorialization by infusing a landscape of death with activities of life.

An occupiable “dividing line” runs through the site to separate the space of burial from that of recreation. Playing fields for local sports teams and residents lie to one side of this line and places of burial to the other; the two realms are connected only visually and aurally. This memorial landscape reminds mourners of the continuation of life, while those who visit the site for recreation or leisure are reminded of the inevitability of death. The juxtaposition of these two programs facilitates an open interaction between life and death.
The word "field" is a rich term — as noun, verb and adjective. As a noun it refers to flat surfaces, to cultivated fields and unbroken expanses, to landscape grounds — sports grounds, batting grounds, military grounds — all of which invoke a strategic aspect to working in the field. As a verb, "field" connotes activating a milieu or network, being actively engaged, "fielding" issues that arise. The adjective "field" implies operating or acting in a field, inhabiting fields or open country: made for, conducted or used in the field. These multiple connotations allow us to think about field-like organizations that aren't necessarily concerned spatially with objects or traditional figure-ground relationships, but instead invoke a network or process-based idea about working the ground.

One aspect of network is the interplay among multiples. Field Operations is fully collaborative, not only in that my partner Stan Allen is an architect and I am a landscape architect and in our claim that we have a shared interest in urbanism, but also in that we involve a number of collaborators — lighting designers, transportation engineers, hydrological engineers, ecologists, economic advisors, and so forth — in all of the projects. We embrace that process as a genuine conversational and creative exchange. Rather than the traditional idea of the planner or the architect as the individual in charge, merely using consultants, we try to engage their expertise more directly. Such engagement is all the more important given the complexity surrounding urbanism today, where one has to learn the art of inclusive conversation in order to get anything done.

Not only is practice becoming incredibly complicated, but for landscape architects in particular, creative practice is further hindered by fairly limited ideas of what landscape is. As is well known, the term landscape derives historically from the idea of a picture. In the popular imagination landscape architects are people who create beautiful scenes — romantic, bucolic and pastoral — comprising grasses and rivers and woodlands. If there is a building, it might be a ruin or a modernized version of a neoclassical pavilion. This understanding derives from the painterly tradition of the vertical canvas. If you trace the term landscape back to its etymological origins in the Dutch term landschap, signifying a painted representation of some territory, the notion of landscape is dependent upon the prior production of a visual image. To behold the environment as a "landscape" implies the prior visualization of a scene.
The popular idea of landscape architects as modern parishioners of an updated eighteenth-century neoclassicism can no longer order the large infrastructural works that dominate the contemporary landscape. Thus our work prioritizes a different root definition of landscape, one associated with a fieldlike organizational, rather than a pictorial, emphasis. The Old German term landschaft refers to a working community, a setting that comprises dwellings, pastures, meadows and fields. It infers a deeper set of relationships among patterns of use, activity and place making than does a purely visual understanding of the term. In the working landschaft performance and event assume conceptual precedence over appearance and design.

This more active concept of landscape is encoded in the temporary settlements of the Souf tribe, which reflect the symbiosis of natural and human forces as the tribe struggles to survive in a hostile environment. The Soufs live in the Sahara Desert and move every few months from site to site, sand-crater to sand-crater, dragging their palm trees with them. They follow an underground river that shifts course over time. When the ground starts to dry up, they find where the river has gone, dig up their palm trees and move them to the new location. They dig craters of sufficient depth to obtain water for the roots and use palm fronds to build fences that prevent the crater from filling in with sand. This notion of landscape implies an organizational geometry that is dependent on the circumstances of dwelling in a particular environment. If you were to represent the Soufs' occupation of the land in plan, it would yield an interesting set of geometries, yet the settlement pattern of this tribe is motivated not by formal or compositional directives, but by a set of logistics with which they have to contend in their daily circumstances.

Our interest in trying to understand the performative potential of geometry in the constructed landscape motivated the series of flights I took across the United States with aerial photographer and pilot Alex MacLean from 1990 to 1993, which resulted in our book Taking Measures Across the American Landscape (1996). Rejecting the scenic value of landscape in favor of its qualities as an active and temporal medium, we sought to ascertain the logics behind the geometries of large infrastructural works. These logics might be prosaic; they might be logics of economics or production, but they have the capacity to contribute to an understanding of organizational geometry in the service of performance.

Perceiving the landscape's functional logic led us to appreciate the temporal potential of formal geometry. Because a landscape is always changing, not only from season to season, but from month to month or day to day, we are interested in geometry not only for its formal organizational status, but also for its provisional capacity — the ability of certain organizing geometries to be flexible, adaptive and responsive to various changes, while each time setting up the conditions for a particular set of opportunities.

This notion of the work of landscape as an ongoing process takes its inspiration from land art. In his essay “Notes Toward the Development of an Air Terminal,” Robert Smithson questioned whether the work of art could be understood as a process, rather than as a finished piece. He argued that all stages of a work — survey, map, foundation, scaffolding, construction process, post-occupancy and final decay and deterioration — might be understood as constituting the work of art. Smithson compels us to think about production in terms of time and process, rather than as some kind of frozen, perfect artifact that cannot be maintained.

Smithson's notion of the art-object-as-process has influenced not only the way we think about design, but also how we approach its mode of production. If Smithson gives us the basis for a performative landscape architecture, we still need to translate these concepts into site-specific processes. A point of reference for this notion is Robert Rauschenberg's painting technique, which art critic Leo Steinberg terms the "flatbed procedure." Rauschenberg's paintings hang vertically in the gallery, but he produces them horizontally, on the flat. This difference in working method is significant. Rauschenberg belongs to a group of artists who, a bit like Smithson, are interested not in the work of art as a finished piece, but as a durational experience of discovery and insight. The horizontal surface serves Rauschenberg as a kind of scouting and sorting table, a taxonomic searching device wherein elements are organized in a certain system of classification, then rearranged and sorted into alternative schemas of relationship. Hung vertically, a Rauschenberg canvas becomes a diagram of artistic process and creation, as distinct from works created in the pictorial context of a vertical picture frame.

The diagram is at the root of our design process; it reflects concepts as well as strategies for landscape and architectural production. Rauschenberg's approach gives us a diagramming process that integrates mapping and analysis into a conceptual design taxonomy. We approach diagramming as a flatbed activity, in terms of finding or structuring relationships among disparate factors.

Louis Kahn's diagrams for vehicular circulation in Philadelphia (1962-53) reflect such a flatbed activity. Kahn's drawings represent not roads and streets, but means of vehicular circulation and the idea of parking garages as cyclical, circular structures. Although they are fictional graphic inventions, these diagrams are informative. Through them, the plan of Philadelphia becomes a set of strategic relationships that facilitates novel readings of the city.

Another example is Buckminster Fuller's dymaxion map projection. Fuller was the first to dissect the surface of the planet into a series of triangles, like an orange that, instead of peeling out, unfolds panoramically. This process enables you to unfold the planet in any number of ways, and Fuller makes the point that these unfoldings construct different strategic relationships among the parts. This differs from the Mercator projection for mapping the planet, which has been criticized because it places Europe in the center of the map and privileges north, thus deemphasizing south. The South American artist García Torres turns a map of South America upside down, points it north, and puts an arrow directed upwards with a big "S" at the top to call attention to the implied hierarchy of a Eurocentric northern idea of the planet. Fuller's projection allows the planet to be unfolded in multiple ways and therefore sets up the potential for new and different interpretations. Like Fuller, we are not interested in representations that might convey mobility and flux or the dynamics of processes. We are more interested in those representations that effect, or put into effect, those processes, dynamics and forces.

The ideal diagram balances form and content to capture a specific reality. Engineer Charles Joseph Minard's famous diagram of Napoleon's 1812 invasion of Russia (1861) is held as the birth of empirical social mapping. This well-known drawing depicts the route of Napoleon's army moving east from Poland into Russia and its subsequent retreat. The initial thickness of the line represents the 400,000 soldiers who started on the march; by the time it reaches Moscow, the line's thickness is a fourth of its original width. The soldiers' return is reflected in a second line that continues to thin as their numbers decrease in the harsh winter conditions.

Diagramming allows us to apply process-based ideas born of land art to urban infrastructure. By focusing on how things operate rather than how they appear, on how a project relates to the working of inhabited ground, the diagram enables us to outline the performative dimensions of a project, as opposed to the formalization of scenic views. Our first commercial commission enabled us to test these ideas on a large strip of land along the Delaware River in North Philadelphia.

The North Delaware Riverfront Master Plan, Philadelphia, 2001

In laying out the plan of Philadelphia in 1777, William Penn gave the town the bounded, hierarchical and centric form of a rectangle with green squares at the center and in the middle of its four regular quadrants. In a current plan of Philadelphia that original rectangle is just one concentration in a network of such areas. This transformation is not peculiar to Philadelphia; it is characteristic of many cities today, where the concentration of inhabitants, the economic transactions and the programmatic range and density are no longer unique to the central city. A number of suburban nodes are just as dense as the historic center; as a result the freeways are no longer only congested during morning and evening commutes, but throughout the day, because people travel in multiple directions. This shift from bounded, concentric ideas of organization to more network-based, migra-
tory, time-based systems of distribution is a shift from the old city with its section stacked vertically to the extended horizontal city.

Like many American cities, Philadelphia has turned its back to the river, where vacated industrial building monopolize the waterfront and limit access to it. Our site, a ten-mile strip between Interstate-95 and the Delaware River, follows the course of the northeast railroad corridor. Its four thousand acres are mostly industrial remnants of nineteenth-century waterfront development. Every city has witnessed the decline of such industries, resulting in huge vacant parcels close to the city center that no one knows what to do with. For the past ten years the waterfront has been in a state of decline. Much of the site is contaminated, toxic. For the residents who live here, it's a dangerous and lonely place, although desirable for fishing and boating for many who find their way to remote piers and beaches. Whereas Benjamin Latrobe and Robert Mills could disguise their Philadelphia Waterworks (1811-19) as an array of classical temples, this tradition provides little guidance for converting the city's decayed waterfront infrastructure into a new postindustrial landscape.

We sought a strategy to reactivate the performative potential of this urban environment where natural or real ground no longer exists, enabling it to support new ecologies and an evolving array of public uses and events, without limiting its capacity to adapt and change over time. First we emphasized the strategic value of this land: four thousand acres in a city that is seeing a diminishing population, in a city that wants desperately to increase its population and attract commercial enterprises to augment its tax base. Development here would change the entire face of the city, converting what is presently an abandoned backyard into a wonderful new frontage.

A number of features would have to remain, such as the working port, the large trash facility right on the river and a roadbuilding storage yard. In addition, some of the extant industrial relics are really iconic landmarks. Thus it would be advantageous to incorporate business and industrial uses with residential development. There is little housing stock in the city of Philadelphia, and it is either very cheap in the fringe areas or very expensive in center city. At the same time, just outside the city border, in Bucks County, they are building tract houses valued at between three and five hundred thousand dollars apiece. The same phenomenon is happening on the other side of the river, in New Jersey, where new condominiums and gated communities privatize access to the riverfront.

How do you change the perception of this land and thus its value? How do you make it attractive to developers to build quality houses, without encouraging gated communities that would close the riverfront to the public? Currently developers would not be interested in this area because of its depressed environs. To overcome this problem and reactivate the river as a public zone, we proposed that a new road be built along the riverfront and integrate it with a new park.
A second problem is the uncertainty of market demand. What if an industrial landowner wants to improve the industrial facilities on one of these parcels? To address the potential for combining recreational, residential and industrial uses in this fractured site, we developed a “zipper” strategy, which enabled us to create a “green” entry for recreational, public and residential land users, and a truck corridor to access those parcels that would accommodate existing land uses or new industrial or commercial development. This overlay of ecological and urban strategies is flexible, capable of adapting to contingencies to either side of the site.
We produced a phasing strategy linked to ecological issues, wherein the green front would be built in a series of stages from 2002 to 2025. These begin with local projects, which we call "seed and link," in which the streets are connected back into the neighborhoods and a series of small arts projects are initiated along the riverfront. This would be followed by a phase of clearing and planting the various vacant parcels to create new landscapes and initiating construction of the new river parkway, which would establish the two fronts. In this manner we would begin to adaptively manage the whole redevelopment over what could easily be a twenty-year process.

**PHASING SEQUENCE**

- **2002**
  - Crystal river linear park
  - Public art, wayside documentation

- **2005**
  - Seed and link neighborhoods to the east
  - Riverfront segment through tributary
  - Clean-up and consolidation of large perimeter sites
  - Expanded river access and programming

- **2010**
  - Completion of full length of riverfront
  - Completion of river-front, tributary and edge restoration
  - Pilot park development of 10% of target sites
  - Expanded remediation of 2nd stage development sites

- **2015**
  - Further development and build of target sites
  - Development of historic, cultural, and institutional buildings
  - Wood ecosystems, perennials, and other amenities

- **2025**
  - Continued seed and development
  - Combined low-density
  - Combined heavy-density in excess of 10,000
PHASING CONCEPT

I
SOIL AND GROUNDWATER TESTING GRID

II
SELECT EXCAVATION OF HIGH-LEVEL CONTAMINANTS

III
COVER AND CAP OF HIGH-LEVEL CONTAMINANTS

IV
PLANTING AGES TO REMEDIATE SOIL AND GROUNDWATER

V
DEVELOPMENT PLAT AND FIRST STAGE DEVELOPMENT OF SELECT PARCELS

VI
SECOND AND THIRD STAGE DEVELOPMENT OF REMAINING PARCELS

SITE PHASING

TODAY

YEARS 1 - 4
REMEDATION FIELDS
+ PRIMARY INFRASTRUCTURE

YEARS 2 - 6
EXPANDED REMEDIATION FIELDS
+ RIVER ROAD
+ RIVER PARK
+ DEVELOPMENT PLAT
+ FIRST STAGE DEVELOPMENT

YEARS 4 - 8
EXPANDED REMEDIATION FIELDS
+ RIVER PARK AMENITIES
+ SECOND STAGE DEVELOPMENT
+ NEW SCHOOL

YEARS 6 - 10
EXPANDED DEVELOPMENT
+ EXPANDED RIVER PARK AMENITIES

YEARS 8 - 12
EXPANDED DEVELOPMENT
+ EXPANDED RIVER PARK AMENITIES

Bridesburg development phases 1-6
When the site is filled out, we anticipate something like four thousand new dwelling units and three million square feet of new commercial space, along with existing healthy businesses that are incorporated into this mix and a continuous riverfront park to provide the impetus for the new construction.

The major means to alter public perception of this area involves construction of an interim landscape that is spectacular but also sets the stage for future development. To interest developers and the public in this proposal, it will be necessary to clean up and/or remove three thousand acres of contaminated soil. Landscape remediation can be accomplished using a group of plants that are known collectively as "hyper-accumulators;" plants that literally pull toxins out of the soil and groundwater through their root systems and accumulate them in an inert state in their leaf stock. When you remove these plants, they take the pollutants with them, so contaminants in the soil such as lead and arsenic and PCBs can be extracted in this manner. Sunflowers have efficacy against arsenic, mustard has efficacy against lead, and so on.
For the first phase of the redevelopment of the North Delaware Riverfront, we proposed a huge public works project in which we would remove the fences from the vacant plots, bring in tractors and cultivate the land, creating huge remediation meadows that extend all the way to the river. These meadows will work to clean the soil whilst implementing a new vision of the potential value of the area. Thus, prior to being developed, all the vacant parcels will serve as interim parkland. Eventually pioneer developers will begin to build, and the site will begin to transition from an interim landscape to a more complex urban landscape. At full buildout, the site will have commercial spaces along Interstate-95, high-density townhouses by the riverfront and large-scale riverfront landscapes.

Certain areas, indicated by ellipses, are so contaminated by local spillage of materials that plant remediation is insufficient, and we will have to excavate and remove and/or cap these sites. Subsequent development would have to build around these particular sites, which will ultimately be incorporated as public space and stormwater management sites.

The existing City Water Control plant has an old wetland that it no longer uses. We propose to revamp it as a new, working wetland for “polishing” the water (once the runoff has been processed with chemicals, it would be filtered through this wetland for further purification), and to incorporate that with electrical generating turbines and a solar panel field. These can produce two megawatts of power, which is enough to heat five hundred homes. These are serious investments in energy production, incorporated with a wetland that is also public space, so that a twentieth-century infrastructure becomes an educational and recreational resource.
The road technology also serves ecological ends. Link roads connect the river road into the residential neighborhoods. The parking bay could be a porous gravel bladder that channels storm water out to the river, where it becomes an architectural feature, while leaching water back into the ground.

Rather than propose wholesale reconstruction of the riverfront, we try to work with the existing positive aspects of the site by restoring the vegetation and the rich diversity of the river's edge. At some points creating a terraced structure, and at others a sloping boardwalk or a tidal flat. At a site where a contractor illegally dumped concrete several years ago, we used the concrete remnants, which had been washed by water, as a beachfront. On a particularly narrow part of the site we created a quarter-mile-long boardwalk, a perfect arc leading through a cattail marsh. We also proposed development of an event terrace along the riverfront, and, at full build out, a new school with playing fields. Housing could front new storm water wetland areas, which could incorporate playgrounds and public spaces. Every house would have a roof deck affording views of the Delaware River bridges.
The proposal reflects a strategic effort to map players, constituencies and interests within cultural production. The process by which it would be implemented is complex, involving multiple voices representing the city — the mayor, councilors, various community groups — as well as specialists such as environmentalists, transportation engineers, etc. The City of Philadelphia formed a planning development agency, which is currently soliciting developers. To carry out the project, however, will require the mayor to write an executive order to condemn a lot of the land, because we don't feel that this transformation can be accomplished piecemeal. The riverfront land is very marginal at the moment; some of it's in public ownership, and some isn't. In order to get it transferred to public ownership, the city would have to condemn it and buy it, and that involves a mayoral decision. He's got nothing to lose by doing it because there isn't a single critic of the plan, but there is a cost. A development agency is currently trying to determine various funding mechanisms. They have some money from the federal government for transportation, which means that the road, or some part of it, will probably be realized. Considering that we started the project last July and we handed in the plan at the end of December, this is encouraging. By February they had already formed a development group. From RFP for doing a master plan to getting to this stage in less than year isn't bad.

As I have argued elsewhere, our work strives to emphasize the experiential intimacies of engagement, participation and use over time, and to place geometric and formal concerns in the service of human economy, thus invoking ecological, economic and productive responsibilities. We have an interest in large-scale surfaces, large-scale organizational frameworks, but also the logistics of constructing them, socially, politically, economically, ecologically. The messiness of that situation challenges us as designers to think less in terms of art objects and more in terms of artistic or creative processes, processes that could result in new kinds of spatial experience, new kinds of temporal experience, new kinds of urban life.

Credits: The North Delaware Riverfront Master Plan, Philadelphia, 2001, prepared by Field Operations for the City of Philadelphia with consultants:
- Ken Greenberg Consultants
- HR&A
- ARUP
- Hill Group
- CH Planning
- SRK
- Prime Building Corp.

Invited to participate in an event at the Center for Contemporary Art at the Hague in 1994 entitled the "Ideal Place," I chose to reply that the ideal place is one that I love enough to maintain. The site to which I devoted my attention was Hague's Centrum voor Aktuele Kunst (HCAK), an intriguing building that was not banal. I devoted the allocated sum to restoring a stairway sited between two exhibition halls, which consisted of three badly deteriorated stairs. The intervention was so minimal it might have been imperceptible, or at least not perceived as a "work of art," if a photograph of the stairway in its prior state had not been added to an adjoining wall. Upon this image I also sketched an idea for a possible further transformation. This proposal, which aimed to improve the relationship between the rooms, was unrealized; only the stairway provided evidence of possible subsequent improvements. Apropos of this work, Philip Peters, director of HCAK, wrote of a "restoration in a new state." ¹

There is a similar paradoxical character to Peter Handke's phrase "Something begins that was already there." ² This could be an epigraph for many of my projects, which reflect a shifting of attention towards the site and an inversion of the usual priority given to program. This attention to that which is already there is not a refusal to modify; it implies neither nostalgia, nor a turning back, nor a nondescript integration with context. This attitude has only a relative and circumstantial value: relative

because it excludes neither what Kenneth Frampton calls the poetic value inscribed in the program, nor the program's capacity to construct the site; circumstantial because it accentuates and elaborates on that which has long been forgotten. This is a position of awakening, which intensifies contrasts and evokes possibilities. It operates through displacements, which require clear distinctions between the found and the modified, and it privileges an almost brutalist use of geometries and materials.

My work, like that of many architects, is often situated in the suburbs. With Michel Corajoud and Sébastien Marot, fellow faculty with whom I teach a graduate course in Geneva entitled “Architecture and Landscape,” I note that the urban crisis is also that of the countryside. Thus, I refuse to acknowledge the notion of the urban project, which would be straightforward only if a clearly defined urban realm still existed.

Enlarging the field of action to the totality of the diffuse city, one quickly becomes occupied with questions of sites — sites that are cleared of their pre-urban connotations and “embarrassed” by a wealth of growing possibilities. In the hyper-city of today, the constitution of the world — its geography, elements of the earth, water networks and vegetal systems — is the bearer of new “rurban” configurations.
The site radiates beyond its limits: the Parc de Lancy

The Parc de Lancy, realized between 1980 and 1986 not far from Geneva, brings to the fore issues of both the site and the region in crisis. In one respect, the site radiates beyond its boundaries. The parcels on which we intervene are never entirely contained within their historic or geographical limits. This project embodies a range of scales, a percolation of elements that are not completely watertight. There is, to be sure, a presence to the site, a resistance underfoot, but it also has a breadth that goes well beyond its physical essence.

The project began as an element of transportation infrastructure: a subterranean pedestrian passage. It was subsequently realized as successive insertions of architectural devices. Year after year we infiltrated the site one element at a time. There never was a master plan, a factor I believe facilitated its realization. I had a very precise idea of the overall structure of the project at the outset; each spring I improvised a new component according to the budgetary possibilities and the programmatic wishes of the communal authorities and inhabitants.

The park is situated in a heterogeneous built environment comprised of a scattering of sports facilities, individual houses and dwelling blocks and towers. It is at the limits of the suburban expansion of the city, where city and countryside seek new forms and a new identity. At the border of the countryside, the plain of the River Aire originally consisted of farmland subdivided by hedgerows, streams and the last folds of the Jura Mountains. During the 1930s it was leveled, its surface scraped and drained to better serve agricultural needs. The project for Lancy is an attempt to
"recover" that which has been denied: the negation of the place and its history. The slow sedimentation of lines left by the processes of formation was followed by the relatively rapid transformation of the site under economic pressures, which negated all relations between architectural objects and the morphology of their context. Thus, the project aims to restructure, restore and reorient an abandoned territory. The walls — their alignments, breaks and resumptions — deform and measure the terrain, revealing the forces that shaped it, its folds, its slopes, its seepages.

All programmatic requirements have been considered opportunities for clarification and affirmation of new differences. As with so many transformational possibilities, these minimal shifts are sufficiently "disturbing" to ensure a new comprehension of the place in light of the impact of a rediscovered feeling, a renewed emotion. The fountain, a chain of waterfalls, first retains then lets go of the water; this staging of the watercourse expresses the forces acting on it — weight, gravity, fluidity — making them more present, more perceptible. The use of concrete block, the most elementary and inexpensive of materials, serves to allay the excessive presence of architecture. It is not the object itself that is significant, only its manner of rising from the earth, its mode of assembly — its surfaces, joints, voids and hollows — the spaces between things.

As an architect, I became involved in landscape through the issue of its preservation. At Laney I utilized several methodological aspects of architectural restoration: interventions that are legible, minimal and reversible. The bridge-tunnel that began the project demonstrates the logic of erosion that has leveled this landscape; the infill and canalized stream reflect the logic of channeling drainage below a bridge that spans the valley. The intervention reestablishes pedestrian passage through this landscape and maintains two constituent aspects of the place: the piercing (tunnel) and the crossing (bridge). It is both a transformation of a found situation and its memory. It also recounts the site beyond: the plain; the shift to industrialized agriculture during the 1930s; the long canal that short-circuited the meanders of the Aire. In its hundred-meter stretch of metal, the bridge-tunnel leads from the vastness of the open landscape to the intimacy of a public garden.
Rapport with nature: revitalization of the Aire

Twenty years after the conception of the Park de Lancy, we were again working on the Aire. The project to revitalize this river, a competition we won in 2001, is the framework for a territorial and environmental reorganization of the entire river valley. Certain concerns provided the foundation for the competition: ecological issues (water quality and biological diversity of natural milieus associated with the course of the river); security of the agricultural terrain in the face of flooding; urbanization of the region surrounding the Aire. Certain types of cultivation are better at withstanding flooding, i.e., beetroots and wheat, but in the more sensitive zones of truck farming, it takes two years of work to reconstitute the soil following a flood, a situation no longer tolerable for growers. In terms of ecological issues, the morphology of the canal and its concrete materiality do not encourage biodiversity. In addition, one must take into account the existence of a beautiful public promenade that stretches along several kilometers of the canal.

Starting from the course of the water, we proposed new connections to balance the needs of agricultural production, urban development, leisure spaces and nature reserves. The anticipated response was to eliminate the canal, thus recognizing that the work of the 1930s was in error. To erase it, however, would deny the complexity of the area's formation, the constructed artificial character of its "nature," and would remove the clarifying aspect of the canal as public space. Alternately, to keep the canal yet return the river to its ancient meanders, as if one could replay history, would destroy the biotopes that have developed on the land formerly occupied by the river, which are as interesting as those one might hope to create.
Our project is a territorial system that effects parallels among its constituent elements: a new rambling space for the river, the transformed canal and the promenade. Its logic is made visible and noticeable by the long straight line of the canal, the architecture of which isolates and protects the natural areas that are being recreated while maintaining its previous role of regulating the route. The project provides a calm to the area, which allows one to be struck by the beauty of the countryside across all its scales. It is a space of wind, of birds and of far horizons that simultaneously affords a closer look at the flowers, plants and developing vegetal mosaic. As with the Parc de Lancy, the project expands beyond its limits. It links ditches and refuge areas of the smallest mammals, while it modifies and influences an extensive area far beyond the river and canal. The canal, which is only filled with water during periods of flooding, is transformed into experimental gardens for the Geneva Botanical Garden. Promenading along this great botanical laboratory, the visitor is witness both to changes in the mode of agricultural production and to a new rapport with nature.

The canal and river traverse diverse administrative entities, affecting large infrastructural systems. They offer a form for these territories in open transformation, a form that is familiar. Just as the Aire has cut a route through the countryside amongst fields, vineyards and houses, so these forms reflect the enormous human effort of those who have come seeking water and have used local materials to organize the relationship of the river and the fields according to the means of their times. Today, when one must reconsider these relations, the river plays an important role. In public meetings and municipal councils, everyone profits by speaking of something else, relating how one might gain access to the water, asking whether one can bathe in it or one would want one's children to do so.

**The project of the ground: the Berlin Lustgarten**

In the open upheaval of Berlin, the invitation to participate in a competition for the Lustgarten was an opportunity to work literally on the foundation of the city, on its original site. The Nazis transformed the Lustgarden, created during the 18th century opposite Karl Friedrich Schinkel's Altes Museum, into a military parade ground, a practice retained by the successive regime. The program for the 1994 competition was simple: to provide a garden where museum visitors could rest, without plantings that would mask Schinkel's colonnade. We proposed to sink the ground plane to the level of sand, the white sand that German filmmaker Wim Wenders, in a lecture to a group of Japanese architects, identified as the foundation for the city of Berlin. A stairway leads back to the esplanade, right up to Schinkel's monumental stair. Within the sunken plaza, spherical maple trees five to six meters high would provide a shady covering without concealing the building. This excision would prohibit any further parades by removing the ground that had been subjected to resonating bootsteps. To rediscover the site was to bring to the artificial maple-leaf parquet of horror a question that extends down to the origins in the sand.
The process of transforming a territory:
A growing monument, the Bijlmer Memorial

In 1992, at six o’clock in the evening, a Boeing cargo jet crashed in the town of Bijlmermeer, southeast of Amsterdam. Two years after this tragedy, I was asked to propose a monument, a memorial. The Dutch architect Herman Hertzberger subsequently associated with me on the project.

Even before the crash this town had been the subject of numerous questions and several proposals for transformation. Built in 1971, a series of ten-story buildings at the site of the crash housed 100,000 residents representing seventy different ethnic and cultural groups.1 In 1986-87 OMA [Office for Metropolitan Architecture] and Yves Brunier proposed to introduce certain axes of intensification: to bring in that which was missing at the level of the ground plane, rather than destroy the buildings; to remove and immediately add, and even exaggerate, that which had never functioned.2 In spite of their proposal, building demolition was in progress. We wanted to use the intensely dramatic moment of the crash to link ourselves with the ongoing transformation of the city.

Our project began with a tree that the Boeing had grazed, around which survivors and friends had spontaneously left toys, mementos and photos of the missing. They called it “the tree that saw everything.” The monument was already there; around this tree the process of bereavement had been initiated. The tree was a transitional element between the inhabitants and ourselves, since their participation was decisive to the project.

We began working two years after the accident, a period during which the inhabitants voiced their needs through a list of requirements, which constituted the program for the memorial. In this way they found a name for the project: “A growing monument,” signifying a beginning and an evolution. The tree would be saved as the heart of the tragedy, a tree of remembrance and bereavement, but with increasing distance the memorial would, little by little, resume the qualities of a park.

Since one of the buildings had already been razed following the accident, and because there was talk of demolishing the remaining buildings, I chose to work on the void. This banality only became interesting through the manner in which it was constructed, by the multiple arrangements put into play to create new relationships. The work on the ground was given concrete expression by an imprint, a line and some foundation walls. The imprint is that of the destroyed building, an asym-

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metric hundred-meter retaining wall that gradually steps down to the nearby canal. Through its variable depth, the supporting wall becomes alternately a step, a seat, a table. The wall is fortified on one side by a long bench; on the other a large slab of concrete serves as a threshold. These are the boundaries of the void, the contours of the absence that receive the gestures of life. The line is an allée. Unrelated to the existing pedestrian network, it follows the route taken by the emergency teams following the accident. It is also a line of growth, consisting of several elementary structures projected to extend across the city that become the prototype and support for new transformations of the public realm. It forms an array of parallel systems: slabs, walls, lines of trees.

The crash cut all the existing roads around the building. They were not rebuilt. Three slabs of slate mark each of these interruptions. Finally, at the airplane's exact point of impact, at the edge of the imprint, is a fountain — a simple inflexion in a slab on the ground, where the water traces the shock wave and flows down the imprint to the canal.

Translated by Caroline Constant
The post-Earth Day conundrum

Translating environmental values into landscape design

Elizabeth K. Meyer

The great divide: science/art, ecology/design

Over the last quarter century, environmentalism has shifted from a fringe to a central issue in American cultural consciousness and political discourse. This evolution in environmentalism from a special interest to a broad-based concern parallels a reorientation in the practice of landscape architecture in which designers have become increasingly knowledgeable about ecological principles and systems and motivated by environmental values. Associated design practices reflect diverse approaches that range from "scientific" restoration ecology to site-specific "artistic" interventions, from projects that simulate natural processes to those that reveal the act of human creativity and construction. Thus the "great divide" between ecology and design, science and art, that characterized the landscape profession in the 1970s has been bridged through a body of work that not only applies ecological environmental values to design, but also suggests a strategy for breaking out of the restrictive tenets of modern art that previously marginalized landscape as both medium and subject.¹

This paper addresses one thread of the postmodern, post-environmental landscape tapestry, namely the search for significant forms and spaces that might embody, reveal and express ecological principles while inculcating environmental values.² It reflects an emerging type of practice that makes the natural world, its ecological and geological processes, more evident, visible and meaningful, thus making palpable, physical and aesthetic the intimate interconnections between humans and the natural world. This ambition injects ecological environmentalism into various aspects of the design process; it challenges the tenet of modern form as an isolated, bounded form or space experienced by a detached, contemplative observer by focusing on the construction of aesthetic experiences bound to, and enmeshed within, specific cultural and ecological contexts. The resulting projects are conceived of as environmental experiences, rather than as discrete landscape phenomena. They constitute what cultural critic Andreas Huyssen identifies as postmodern practice—a critical reconsideration of modern art and culture filtered through a new lens, in this case, ecological environmentalism.³

² Other threads of the postmodern environmental landscape tapestry include: urban works that expand the role of landscape from amenity to essential infrastructure, manifested in the writings of Anne Whiston Spier, Michael Hough, Robert Thayer and Elissa Rosenberg; brownfield and toxic site reclamation; landscape ecological theory and practice influenced by Richard Forman and Joan Nassauer.
³ See Huyssen, "Mapping the Postmodern."
The merit for exploring this genre of work lies in its contribution as a mediating practice between disparate discourses, each with its own language and principles: science and art, ecological environmentalism and landscape design. One conundrum the environmental movement posed for the landscape profession was the disjunction between site analysis and design expression, between environmental values and form generation. After identifying the most ecologically valuable or fragile places, designating them "no build" zones, and ascertaining the most ecologically fit location to site a building and/or construct a designed landscape, how was one to shape that landscape? Was it possible to create places that differed significantly from those of earlier designers who were not as ecologically literate? Could one make the ecological planning process visible to those who experienced such sites? Was it necessary to create places that differed recognizably from existing landscapes for a contemporary, environmentally aware public? Having resolved that the design vocabulary, syntax, and content should reflect the changing values of both designers and patrons, a second problem emerged for landscape architects in the 1980s. In giving form to dynamic processes and fluctuating systems, could one avoid relegating landscape to visual scenery, to stripped-down versions of the pastoral? These were among the questions that confronted designers who were practicing in the quarter century after the first Earth Day (1970).

When American landscape architects such as Susan Child, George Hargreaves, Catherine Howett, Anne Whiston Spirn and Michael Van Valkenburgh began their academic and design practices, two strong approaches existed. The first, environmental or ecological design, emerged from the work of educators such as Ian McHarg. Its primary contribution was to structure the preconceptual design phase according to more defensible, scientific methods. The second model, landscape as art, emerged from the work of practitioners such as Peter Walker, who were concerned that the design process had become so beholden to scientific analysis — ecological, social and behavioral — that the art of making the landscape visible and memorable had become subservient to expressing its functional qualities. The primary contribution of this model was in the conceptual and design development phases, as it adapted vocabulary and tactics from contemporary art to the making of landscapes. These two models existed in opposition to one another, each cognizant of the other but based on distinct value systems and vocabularies.

This isolation troubled, even confounded, landscape architects drawn to the discipline in the aftermath of the 1970s environmental movement. The postmodern concern for environmentalism called into question the divide between science and art that was integral to late modern design theory and practice, exemplified by the work of McHarg and Walker. The work of the next generation identified and problematized two key issues from this postmodern perspective. First, the lack of formal inquiry or invention in much environmental planning and design assured landscape architecture's continued invisibility, a legacy of modern urbanism. This invisibility was frequently clothed in the pastoral, a romantic conceit preferred by many modern architects and landscape architects, who conceived of their projects within a "natural" context. This form of pastoral ecological design perpetuated the visual ideology of the modern landscape that reduced the land to scenery devoid of ecological or cultural content. Ecologically planned or not, such landscapes did not appear managed or designed to most eyes, thus enabling the public, as well as designers and developers, to overlook the impact of suburban construction and sprawl. Second, while the alternative artistic model succeeded in both "making the landscape visible" through artistic devices and overcoming the emptiness of modern urban space, Walker's vocabulary did not acknowledge the difference between the land's surface and materiality and that of a canvas or gallery floor. His minimalist landscapes perpetuated certain values and ideals of modern art, objecthood, and detachment, at the very time such values were being challenged by environmental and conceptual artists.

For landscape designers, immersed in postmodern culture and surrounded by works and theories that questioned the object quality of sculpture and buildings, the venues for exploration between these two models were rich and varied. Landscape as subject, medium and inquiry was no longer marginal, but central to contemporary cultural debates and concerns. What could and did this mean for a discipline whose medium, subject and canvas was landscape? The inquiry that followed was neither direct nor singular, but was made by many through meandering and opportunistic forays as they sought clues and inspiration from various sources. These included: works by landscape architects such as Lawrence Halprin, whose design vocabulary was predicated on the land forms created by natural processes; works by conceptual artists such as Hans Haacke and Alan Sonfist, who were probing the boundaries of art objecthood in their process pieces and performances; works by contemporary environmental and site artists such as Robert Smithson, Michael Heizer, Mary Miss and Robert Irwin, who were making site-specific works outside the gallery; works by contemporary critics and artists such as Catherine Howett, Christian Norberg-Schulz, and Robert Irwin, who were adapting the phenomenological interests in bodily experience, duration, immersion and place-making to design and art theories. It may seem odd that landscape architects were looking to art and design theory and practice for directions about folding ecological principles and environmental values into their creative processes, yet this simultaneous regard for art and science, for theories of site specificity, phenomenology and ecology, was critical to the successful integration of environmentalism into landscape architectural design practice. Post-Earth Day environmentalism was more than a movement to solve individual ecological problems; it was an attempt to change the value systems that created those problems and modify the institutions that sustained them.

What shape did these practices take? Some sought to emphasize nature's forms, others to make nature's subtle and transitory processes palpable and visible, and still others to reveal a site's entire history, its cultural and ecological agents. These varied goals posited the landscape architect as site perceiver, reader and interpreter. Straddling the line between conceiving and receiving, controlling and initiating, the landscape design process anticipated the audience's reactions, perceptions and experiences of place. Therein lay both the strength and the potential weakness of this genre of postmodern environmental landscape practice; its participants assumed that their own site readings could anticipate the site experiences of others, that personal reveries were universal.

Who are these landscape architects, and how do they illuminate the boundaries of this inquiry? Some, like Howett, Spirn, and Van Valkenburgh advocate constructing experiences and implicating natural systems over shaping landscape objects. Such work makes the landscape not only visible, but tangible and palpable; it gives form to an experience that aesthetically engages humans with their environment. Others, like Susan Child, create works that resurrect or recover the cultural and ecological places that are being leveled and homogenized by contemporary urban development practices. Still others, like Hargreaves, Van Valkenburgh and Ken Smith focus on landscape's non-visual aspects that reinforce its qualities of place, materiality, tactuality, fluctuating systems, character and mood. Some, like Hargreaves and urban designer William Morrish, look to the land itself as a generator of form types, enriching an inherited vocabulary of abstract geometry with geomorphologic forms and

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ensembles. Some, like Richard Haag and Laurie Olin, look for material traces in the land's natural and cultural histories to develop a connection between humans and their constructed places. Their works invite subjective immersion rather than alienated detachment.

Art and environmental engagement: phenomenology and theories of experiencing place

The debates within landscape architecture about the relationship between ecology and design did not occur in a cultural vacuum. These individuals found guidance and inspiration outside the discipline of landscape architecture, from philosophers, art critics and cultural geographers who were similarly involved in re-conceptualizing the relationship between humans and their environment. Arnold Berleant suggests that this period's art, from "happenings" to landscape architecture, substituted a "continuity of experience" whose goal was empathy for the modern aesthetic criterion of "disinterestedness." His "participatory model of aesthetic experience," which draws on the aesthetic theory of American philosopher John Dewey and the writings of French phenomenologist Maurice Merleau-Ponty, explains art and design from the perspectives of both audience and artist. Berleant's account of late-twentieth-century art and design requires a conception of space that is engaged rather than abstract, a relationship between subject and object that is connected rather than detached, and a renewed appreciation for experiencing art over time rather than as a single event. This narrative assumes that bodily perception is key to environmental awareness and engagement.

Writings about contextualism, regionalism, critical regionalism, site, place and the body also permeated design journals during the 1970s and 1980s as the pendulum swung away from the abstract, siteless ideals of high modernism toward the site inflected values of postmodernism. One of the most widely read, Kenneth Frampton's essay "Towards a Critical Regionalism" (1983), alludes to particular environmental factors — topography, light, climate and context — that could, through emphasis on their tactile and phenomenal impact on the mobile, sensing body, lead to works that are place specific and thus resistant to globalization and universal solutions. In *Genius Loci: Towards a Phenomenology of Architecture* (1982), Christian Norberg-Schulz outlines a vocabulary for interpreting architecture, landscapes and cities, which stems from everyday things and phenomena that constitute the particular character and structure of a place, differentiating it from any other place. Themes of the body, temporal experience and place also characterize Kevin Lynch's writings. *The Image of the City* (1960) concerns the way one constructs mental maps from daily engagement of a city's streets, landmarks and districts, how perception structures conception or legibility. In *What Time is this Place?* (1972), Lynch subsequently demonstrated how time is embedded in the physical environment and how individual and collective well-being is intertwined with one's sense of place in time. These writings are but a small sampling of the design texts on contextualism, place, phenomenology, site and the environment that pervade the last quarter century's theoretical production.

These theoretical trends found landscape architectural expression in Howett's and Spirn's writings in the late 1980s, in which they speculate about future implications for landscape design practice. Providing one of the first comprehensive theoretical strategies for connecting the aesthetic and the ecological, Howett argues in “Systems, Signs, and Sensibilities” (1987):

"The domain of aesthetics must come to be seen as coextensive with the ecosphere, rather than narrowed to its traditional applications in art criticism, so that aesthetic values may no longer be isolated from ecological ones. Thus every work of landscape architecture, whatever its scale, ought to first of all be responsive to the whole range of interactive systems — soils and geology, climate and hydrology, vegetation and the human community — that will come into play on a given site and will be affected by its design. In the measure that the forms of the designed landscape artfully express and celebrate that responsiveness, their beauty will be discovered."

Fundamental to Howett's argument is her assertion that ecology should not be applied without mediation and that principles of ecology must be combined with two other powerful "critical and theoretical currents" already influencing the practice of landscape architecture: semiotics and environmental psychology. The mediating concepts that Howett gleaned from these currents include: theories of place-making such as Yi-Fu Tuan's topophilia, "the affective bond between people and place or setting;" phenomenologist and philosopher Martin Heidegger 's theories on building and dwelling, which had become cult classics in schools of architecture and environmental design; as well as Berleant's participatory model of aesthetic experience. Each recognized the role experience played in bonding humans to their cultural and ecological environment and acknowledged that those concerns were prerequisites for transforming feelings into values, knowledge and principles for action. Howett intertwined disparate threads and disciplines — environmental art, psychology and philosophy, semiotics and architectural theory — into a narrative that illuminated specific works of landscape art and architecture, outlined current theoretical dilemmas and suggested future directions.

Spirn's "The Poetics of City and Nature: Towards a New Aesthetic for Urban Design," which built on her work as a student and colleague of McHarg, reads like a manifesto, a call to action:

"This is an aesthetic that celebrates motion and change, that encompasses dynamic processes, rather than static objects, and that embraces multiple rather than singular visions. This is not a timeless aesthetic, but one that recognizes the flow of passing time, that demands both continuity and revolution. This aesthetic engages all the senses, not just sight, but sound, smell, touch and taste as well. This aesthetic includes both the making of things and places and the sensing, using, and contemplating of them."

Her argument is predicated on a careful study of the processes of life and nature and the invention of new design vocabularies. She reminds readers that invention is mediated through the conventions of one's discipline, that the development of vocabulary and syntax are necessary for the discovery of content and the communication of meaning.

Despite all the theoretical writing of the period, the most powerful influences on landscape architects attempting to bridge ecological environmentalism and design have been environmental artists, earth artists and site artists. Projects such as Robert Smithson's Spiral Jetty (Great Salt Lake, Utah, 1970), Michael Heizer's Double Negative (Overton, Nevada, 1969-70), Walter De Maria's Lightning Field (Quemado, New Mexico, 1971-77), or Robert Irwin's Nine Spaces, Nine Trees (Seattle, Washington, 1979-83) resonate powerfully with landscape architects because these artists employ formal presence to focus attention on a place — its ancient natural histories, its deep time, its recurring natural cycles and processes and its particular qualities — which are almost invisible to a culture of distraction and disengagement. In the phenomenologically-based working methods and artworks of Smithson and Irwin, landscape architects find alternatives to the abstraction of ecological analysis. Instead of mapping large parcels and attempting to gain a comprehensive, conceptual understanding of the whole, artists like Smithson and Irwin concentrate on observing specific phenomena and processes at a particular place. They begin with that which is knowable at the scale of the body. From this standpoint, they seek through their interventions to reveal the long-term processes that formed such a place.

These artistic explorations demonstrate that the criteria by which modern art and architecture were evaluated, and through which landscape design was cast out of the family of the fine and applied arts, no longer matters. The long-standing consensus about what constitutes art, as an "aesthetic of separation, isolation, contemplation and distance," created philosophical

21 Ibid., pp. 4-5.
24 Similarly, in architectural education and practice of the 1970s and 1980s, the boundaries of the pristine object-building and its surrounding amorphous landscape were being called into question. Whether in the site plans of Michael Graves, the urban design plans of Colin Rowe's studios, the geological constructions of Stanley Saitowitz, the phenomenological explorations of Juhani Pallasmaa or Steven Holl, the fictive site archeologies of Peter Eisenman and Laurie Olin, or the writings of Caroline Constant and Carol Burns, architects were reflecting on the biases of their disciplines and envisioning new relationships with the ground, natural processes and natural histories.
problems for the inclusion of landscape design among the modern arts. By the 1980s, the aspect of landscape that was deemed most problematic for modern art critics — its field-like properties, its systems aesthetic, its ecological flows and fluxes — made it central to a postmodern practice in many fields besides landscape architecture. This centrality encouraged designers not only to produce new works, but also to reconsider the works of their predecessors. One landscape architect whose standing rose because of this new conceptual framework was Lawrence Halprin. His work represents a type of critical practice that gives form to ecological environmental values through the construction of experiences.

Initiating the new aesthetics of environmental engagement: Lawrence Halprin

Halprin's early projects were appreciated anew during the 1980s and 1990s by landscape architects who were searching for a middle ground between McHarg's formless environmental designs and Walker's landscape architecture-as-art objects. For this generation, Halprin's work embodied many of the attributes advocated by Smithson and Irwin. Halprin reconceptualized landscape space as bounded flow, a fluid medium experienced in a multi-sensory way by a moving body; he created an expanded morphology of landscape forms inspired by direct observation of surfaces shaped by natural processes, such as erosion and deposition.

Halprin's site strategy for the Sea Ranch community, near Gualala, California (1962-65,1993), designed in collaboration with architects Charles Moore, Donlyn Lyndon, and Joseph Esherick, was predicated on nature's processes, temporal structure and flows, and experienced over time by a body in motion. Halprin's firm and his consulting scientists studied the site — a striated landscape of open meadows framed by monumental hedgerows running perpendicular to the Pacific coast — over the course of a year. They concluded that this cultural landscape was discerned to have been shaped by grazing, the directionality of the wind and the erosive power of the water. Their design guidelines reinforced these forming processes by clustering buildings and streets along the hedgerows and maintaining the meadows.

The phenomenal experience of these varied ecosystems is one of strong contrasts. The residential streets along the hedgerows are shady, calm, cool and moist, while the public spaces of the meadows are sunny, wind-swept, warmer and drier. The daily routine of strolling along the bluff, against the grain, from hedgerow to hedge row, maximizes one's experience of these differences. Building design interprets and concretizes these processes; the roof slopes facilitate the flow of wind, while the

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26 Two events that mark this renewed interest in Halprin's work include the San Francisco Museum of Modern Art exhibit, Changing Places (1986), and the Harvard University Graduate School of Design symposium, "Urban Ground" (1991).
houses shelter gardens and terraces. Working with the site structure and character resulted in a memorable place, characterized by a vivid, staccato-like experience that foregrounds the ways cultural and natural processes shape and sculpt the land. The Sea Ranch landscape is a rich mosaic of meadow and hedgerow that connects residences via public walks while encouraging engagement with the natural environs.

Halprin's conception of the landscape as a temporal medium, and the body's role in the experience of place and space as a qualitative, palpable fluid presence, contribute to a type of landscape architectural practice that is an art of environmental engagement. His design method, his formal vocabulary and his multi-disciplinary influences foreshadow the works that followed.

**Giving form to environmental values: constructing experiences**

Projects of the succeeding generation of landscape architects reconcile earlier ecological design values with the operations of landscape-as-art and the systems aesthetics of environmental art. Designers such as Child, Hargreaves, Olin, Schwartz, Smith and Van Valkenburgh eschew the schism between the ecological and the formal, the system and the object, the environmental and the artistic that is intrinsic to the divide between ecology and landscape-as-art. They seek to make the environment legible to a culture that is distanced from the natural world by employing the materials and processes of nature. Such experiments frequently result in the construction of an "aesthetic of experience" rather than an "aesthetic of objects." 28

By creating places of wonder and beauty, landscapes of strong textural or scalar juxtaposition and ecological spaces of ever-changing mood and character, landscape architects provide occasions for humans to revel in the moment and to feel connected to a place. By setting a site in motion or registering changes over time, landscape architects translate their ecological environmental values into a new design language that is dynamic, fluctuating and process oriented. The open-ended nature of this work contrasts the static, idealized public landscape scenery that accommodates human activity and natural processes but is not inflected by them. This work's dynamic qualities, which facilitate unexpected experiences and interpretations, enable ecological environmental values to be embodied in and engendered by it.

Whereas theories of place-making, phenomenology and land art provide bridges for landscape architects to manifest environmentalism in their work, they also pose new challenges. How can one design with the materials of nature, in the place of nature, and about the content of nature, and not confuse the result with nature itself? Will it still be recognized as art? A late-twentieth-century response to these questions was facilitated, on the one hand, by a broader art and design community that was challenging its own biases and, on the other, by the explorations of landscape architects into new strategies for developing formal languages based in natural processes. Hence, during the 1980s changes in theories outside the discipline of landscape architecture intersected with changes within, creating a fertile ground for landscape architects interested in manifesting environmental values in their landscape forms and spaces.

**Giving form to the invisible: phenomenal and natural processes**

The work of Michael Van Valkenburgh and George Hargreaves draws on the sensibility that looks to natural processes and phenomena as generators of landscape form, while simultaneously constructing an aesthetic experience out of those phenomenal processes. Van Valkenburgh's Ice Wall series, temporary installations built on campuses and in private gardens in the Boston area and on Martha's Vineyard (1988-90), draw on the works of his predecessors, Halprin and Walker, Smithson and Irwin. 29 These projects belie the idea that landscape space is open or empty. They also make explicit the temporal aspect of landscape space. The Ice Walls foster a variety of experiences over the course of a day, depending on sun angle, ice thickness and the visitor's

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28 Miller, The Garden as an Art, p. 178.
position. The wonder of these environmental spectacles foregrounds the processes of nature and make them evident, in fact magical, to denizens of long wintry regions. This sort of temporary installation makes the environment visibly temporal, an act of recognition that might be understood as a first step toward developing aesthetic awareness and environmental appreciation of hydrological processes such as freezing and thawing, with their attendant accumulation, crystallization, dripping and melting.

Van Valkenburgh extends this observation of process and phenomena to larger public works, such as Mill Race Park (1989-93), built in collaboration with architect Stanley Saitowitz on an 85-acre site between the western edge of Columbus, Indiana, and the White River. Here the water in flux is liquid, not frozen. By cutting and filling the flood plain to create pools and mounds, and then choreographing circuit walks and drives through the park, Van Valkenburgh gave the city a park that celebrates the rise and fall of the water level. He introduced four major elements: parking surface and adjoining recreational fields; an amphitheater; a circular pond; an overlook mound at the edge of an existing irregular pond. Earthwork mounds and terraces lift the amphitheater and playground up above flood level. Along the edge of the circular pond, the level of which changes according to that of the river, lies a picnic shelter, a covered bridge and a rest room. The enclosing walls of these structures do not meet the ground so the floodwaters can flow in and through them.

For a critic or student accustomed to the geometric clarity and singular gestalt of many modern and classical landscapes, the park’s site plan is difficult to decode. Its structure is not dependent on some a priori sense of composition or typology; instead, its forms and spaces derive inspiration from the cyclical processes of river flooding, introducing memory into the experience. Hence, the park is as dependent on temporal as on spatial memory. These characteristics bind Mill Race Park to the postmodern Picturesque, as redefined by Yves-Alain Bois and Robert Smithson, as well as to site-specific environmental art. The bodily sensation of strolling, driving and moving through this public landscape and participating in the town’s annual rituals and celebrations over the course of a year or a lifetime is key to this experience.

The forms of the park create an armature for engaging the fluctuating edge between river and city, water and land. This edge is manifest in subtle but perceptible changes in the elevation of the ground plane. As the water level fluctuates, the four primary events of parking field, amphitheater, viewing mound and lake alternately emerge from and into the surface of the White River. The park embodies the city’s relationship with the river as one of giving and taking, not controlling.

While the forms and spaces of Mill Race Park are shaped by the designer’s reading of the site as a place formed and defined by the flow of water, the sculpted landforms of Hargreaves’s Candlestick Point Cultural Park (1985-93) manifest the wind’s formidable forces. Hargreaves and his collaborators, environmental artist Doug Hollis and architect Mark Mack, created this park on a disused 18-acre site on San Francisco Bay. They sculpted the ground into an elongated, tapered terrace that is bounded by narrow channels and flanked by a repetitive field of perpendicular crescent-shaped mounds, the form and directionality of which derive from the site’s pervasive offshore breezes.

Entrance from the parking lot is through a narrow opening in a linear mound of earth pushed back by long concrete retaining walls. The mowed lawn terrace centered on this wind gate tapers inward and down toward the water, as if the wind shaved its surface and cut its blades of grass. Gravity and the wind compel one’s body toward the water’s edge to view around the point and gaze at the distant horizon of water and hills. The smooth lawn contrasts with the flotsam of rock, wood and sediment deposited in the channels beyond by the rise and fall, flux and flow, of the tidal bay. Looking toward the perimeter of the park, wildflower covered mounds recall dune-like landforms shaped by aeolian processes.

Hargreaves has described this place as an “environmental park,” rather than a nature study area. Visitors can experience the specific qualities of the place, its exposure to wind and waterfront, in the same way the designers did during their frequent site visits. The park does not separate humans and the natural world through exhibits or interpretative signs; rather, it plots a series of interactions, movements and engagements between humans and the environment of which they are a part — an environment that, because of its forces, creates difficulty walking and shapes the changing boundary between land and water.

The shaping of the landform and the primary spatial sequences around these landforms refer to and rely on the site’s wind processes in varied ways. They channel and deflect the wind’s flow to create a rhythmic experience of calm and force, sound and silence, gathering and walking; they refer to other forms shaped by the wind, such as aeolian dunes; they create microclimates that foster diverse habitats of volunteer grasses and wildflowers to supplement those planted on the site. The park functions as more than an arena for the performance of the site’s invisible processes, however; the aesthetic experience of walking between these two types of landscape — mowed and smooth, rough and tawny — is accompanied by an increased awareness of their environmental ethical implications. The former requires watering, fertilizers and herbicides to maintain its appearance; the latter requires only an annual mowing and the movement of seedpods by wind, water and birds across the site. The sensuousness and tactility of Candlestick Point Park foster recognition that landscapes are human constructions and that various ways of making and maintaining them have long-term consequences for the health of the larger ecosystem.

Mill Race and Candlestick Parks illustrate the possibilities of a design process that is open to new forms and arrangements revealed through a close study of a site’s natural processes. Both projects allow us to imagine the richness of a postmodern landscape construed through temporal and spatial sequences, rather than merely scenic ones. Both projects register processes, but they also rely on objectification of landform and landscape space, albeit in non-hierarchical arrangements and non-Euclidean forms. The inquiry into new form grammars derived from land formation processes and structures leads us to consider a group of projects that see the land as having form that predates a designer’s arrival to the site, and that look to the geological, fluvial and aeolian processes of land formation as a basis for form types in landscape architecture.

Giving form to the neutral field: landform as mass and figure

From an environmental perspective, one of the problems with the normative design languages of twentieth-century American landscape architecture was its lack of nuance. Geometric plans were often associated with the constructed human realm, whereas curvilinear plans were imagined to be natural, or even undesigned. Within such formal preconceptions, the relationship between human-made and natural was a relationship of differences rather than reciprocities. A parallel assumption on the part of many architects was that buildings could be conceived for sites that were metaphorically “natural,” and that an informal arrangement of plants and outdoor spaces would evoke that metaphor. Yet, a site can be conceptually “informal” only from a limited formal and non-ecological perspective. In such a worldview, Euclidean geometry has a monopoly on form. This aspect of nature’s invisibility to modern architects conspired with other forces, such as the economically-based system for evaluating the land, to marginalize the environment as a generator of design form and order. In this scenario, ecological planning would result merely in “informal” designs on ecologically appropriate parcels of land.

The writings of urban designer William Morrish and the public parks by Hargreaves and his partners, Mary Margaret Jones and Glenn Allen comprise explorations into new types of designed landforms derived from geomorphology that constitute a new “urban ground.” Morrish wrote his manifesto, Civilizing Terrains (1989), to “illustrate some basic notions of the origins of integrating land and built form together into a comprehensible system.” Hargreaves’s landform grammar expands upon the Euclidean repertoire of cones, pyramids and orthogonal shapes with the striking and recognizable natural forms of drumlins, eskers, barchan dunes and braided linear mounds. Like Morrish, Hargreaves mixes geomorphologically derived landforms with geometrical forms, creating sculptural complexity while simultaneously conceptualizing the boundaries between the built and the natural. According to Morrish, this promiscuous mixing results in settlements that emerge from the structure and form of the land. Like the writings of architectural critics Carol Burns and Kenneth Frampton, Morrish’s manifesto calls for a design practice that does not assume some abstract tabula rasa as the pre-existing condition of designing. Instead, by acknowledging the form-generating capacity of a region’s topography — its steepness of slope, aspect and geomorphology — one can begin to overcome the placelessness that a “cleared site” strategy perpetuates.

This mixture of forms makes the constructed nature of Hargreaves’s urban landscapes palpable. He does not mask this effort to reclaim industrial riverfronts and to manage floodwaters under a veneer of pastoral informality; rather, he manifests the interdependence of natural and human processes through the interdependence of geomorphologic and geometrical forms. At Guadalupe River Park (1985-92), a three-mile-long recreational/storm water control project within the city of San Jose, California, Hargreaves replaced an engineering vision for managing the river’s floodwaters by means of high walls with a constructed flood plain of varying width. The form and character of the flood plain vary according to the adjacent urban conditions. Near a neighborhood demolished to make way for the airport expansion, he created a braided earthwork of elongated mounds and hollows, filling some of the vacant blocks and recovering the area’s function as a flood plain — that of retaining waters during heavy rains, reducing downstream flooding and purifying the percolating water. Grid and braid overlap to create a complex undulating tapestry of garden plots, bosques and rivulets. The river encroaches upon the city, creating a surface of negotiation between wet and dry.

To the south, the city encroaches on the river, where high embankments become places of close encounter and elevated overlook during periods of flooding, fostering awe and wonder at the water's force and volume. At the confluence of Los Gatos Creek and Guadalupe River, the narrow channels open up to form a space that mimics the form of the elongated braids. This bowl is framed with large triangular earth forms of the Euclidean, not the fluvial, type. These provocative earthworks create a territory along the river's banks that is both river place and city place: sometimes wet and sometimes dry; sometimes full of the movement of water down its channel and sometimes full of people strolling along its banks; sometimes a place for water to collect, linger and slowly percolate into the ground, at other times a place for the citizens of San Jose to collect for civic events, to linger in one another's company and slowly return to their places of work and residence.

It is a paradox of this project that the desire to create emphatic sculptural landscape form creates a place with equivocating lived spaces that do not have single uses, but accommodate the flux and flow of riparian and urban cycles. Control is not the objective, as the river is permitted to transgress its proper boundaries at times. Another curious characteristic of this emphatically sculptural earthwork is its "open-endedness." Hargreaves's design practice might be understood as initiating process, rather than imposing form. Given the dynamics of water flow, soil erosion and deposition and plant succession, the limits of mound and depression, meadow and thicket, will vary over the course of years and decades. Some changes will be gradual, others will result from extreme floods or droughts. The figured earthwork of the Guadalupe River banks that register the vicissitudes of natural and urban processes will allow San Jose's citizens to witness the interrelationships that bind them to their place and allow them, in Norberg-Schulz's terms, "to dwell." Hargreaves did not resort to either an outdated image of nature, such as smooth river banks, clumps of trees and meandering watercourses that belie the impact of development on the river's volume and quality, or an image of technological control, such as a deep concrete culvert that hides the river and its waters from the city, masking the impact of the water's release downstream. Instead, his project constructs new forms and spaces that promise to alter public conceptions of the boundaries between nature and the urban infrastructure.

With these creative explorations of landforms shaped by natural processes, Morrish and Hargreaves are building on a tradition that is some thirty years old. Halprin's fountains in Portland (1966-67) and Seattle (1970-76) were essays on the transformation of forms shaped by natural processes into urban place formation. Halprin's, Hargreaves's and Morrish's examples allow us to imagine the environmental role of a design practice that employs nature's forms and processes to reinvigorate human settlement patterns and gathering places. What differentiates them from other contemporary works that objectify natural geomorphology for symbolic resonance and sculptural presence, such as Martha Schwartz's Federal Courthouse Plaza, Minneapolis (1998), is the concern for revealing the reciprocity between form and process, between human routines and natural cycles. These designers employ varied means by which to translate a concern for natural processes into a physical, sculptural vocabulary of design forms. These vocabularies do not privilege the forms of culturally constructed geometries over the forms of naturally evolving geomorphologies. The concepts "formal" and "informal" have little significance for the work of Halprin.
Morrish and Hargreaves. Their forms are not the counterpoint to some ordered urban architecture; they are forms of the land, and in the case of Guadalupe Park, forms that welcome the reshaping and sculpting that the next heavy winter rain or crowded summer festival will inevitably bring. Form and space in this genre of work are not absolute, but armatures capable of transformation and deformation over time. This type of practice carries out the goals for re-imagining the park that Smithson outlined in 1972:

Parks are finished landscapes for finished art. A park carries the values of the final, the absolute, and the sacred. Dialectics have nothing to do with such things. I am talking about a dialectic of nature that interacts with the physical contradictions inherent in natural forces as they are — nature as both sunny and stormy. Parks are idealizations of nature, but nature in fact is not a condition of the ideal. Nature is never finished.  

Hargreaves makes the city’s natural history physical by creating a river park that has a temporal as well as a spatial armature.

**Giving form to the neutral field: land as deep structure**

Various urban landscape projects and theories have also focused on using the city’s cultural history as both a source of physical form and a spatial and temporal armature. During the early 1970s, the excesses of urban renewal professionals, as well as the preparations for the US Bicentennial refocused Americans’ attention toward the physical reminders of their own history. In response, some urban designers advocated contextual design strategies that valued, preserved, adapted and interpreted the physical context in both infill and new districts. The Battery Park City master plan, New York City (1979), devised by Cooper Eckstut and Hanna/Olin, was such a project. This linear precinct, created from excavated landfill from the World Trade Towers construction, was laid out in an urban grid with a continuous street network and street walls that recalled the fabric of the adjacent city. Its first public landscape to be constructed was Hanna/Olin’s river esplanade, which was reminiscent of several revered public spaces in Manhattan. Battery Park City was to be as continuous as possible with its urban context. This context was construed as visual — reflecting the cultural and physical history of the city that persisted and could be emulated and reinterpreted.

For some, this visual contextualism belied the city’s actual history, which was less coherent and more fragmented than the regular pattern of Battery Park City’s blocks, streets, parks and esplanades. Furthermore, along the water’s edge, the history of the city was both ecological and cultural; it was the story of filling, regularizing and hardening the edge to control the impact of the fluctuating tides, to maximize human use and increase economic gain. Battery Park City’s southern esplanade and park called South Cove (1985), designed by a collaborative team of landscape architect Susan Child, artist Mary Miss and architect Stan Eckstut differs strikingly in structure and character from the Hanna/Olin esplanade. This physical difference manifests a divergent set of environmental values concerning what it means to recall the past, to frame the scope and content of the context. At South Cove, the edge between land and water is layered in section, varied in material and thick in horizontal dimension; its complexity reflects the contingency of the site: water filled in and decked over to expand the city. By unpeeling its layers, Child revealed the environmental history of not only this constructed site, but also much of Manhattan’s waterfront, a past that is not frozen in time, but obscured by layers of accretion and change.

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*Suana Child, Mary Miss, Stan Eckstut, Esplanade, South Cove, Battery Park City, New York, City, 1985-present*
The metaphor of the South Cove park as a thin skin over structural skeleton is recapitulated in the shape and outline of the metal overlook, designed by Mary Miss, which echoes the form of the Statue of Liberty visible in the distance — another mass whose surface belies the skeletal nature of its structure. Child and her collaborators constructed an experience that provides a different relationship not only to the river and the shore, but also to history and time itself, introducing environmentalism into the historical arena. In place of the notion that Battery Park City was a tabula rasa to be given structure and character, South Cove’s design forms resurrect the coastal processes and histories that predated the cleared site, the landfill and the industrial waterfront. The project avoids the nostalgia that such a strategy could readily evoke by employing a design language of fragmentation and juxtaposition, rather than imitation and replication. By displacing the shoreline to a point above and behind the esplanade, this landscape evokes wonder and surprise, rather than familiarity. It engages those who move on foot and wheels, along water and land, to question the effortlessness and naturalness of this new/old urban precinct. The place of engagement between land and water at Battery Park City is the place where the mythic, historical context that under-girded its master planning principles was revealed to be a superficial veneer masking the site’s actual history of environmental change. It is only by moving along the esplanade across sectors designed and built by others that the experience of South Cove becomes environmentally meaningful and aesthetically powerful.

Finding form in the formless: the shape of change, dynamics and disturbance

A number of projects designed on disturbed or polluted sites gain their power through a similar contrast and juxtaposition with their surroundings, demonstrating how a landscape architect can acknowledge the history of human use and abuse on the land. In so doing, Richard Haag, at Bloedel Reserve on Bainbridge Island, Washington (1979-84), worked outside the aesthetic paradigm that continues to dominate land reclamation efforts. Rather than returning the site to some image of an idealized nature that existed prior to human dumping, harvesting, destroying and polluting, Haag works with site contingencies, highlighting and reinforcing them, calling into question the assumption that industrial destruction must be hidden beneath a veneer of pastoralism.

The four gardens that comprise Haag’s work at the Bloedel Reserve are well documented, but their relationship to the forest from which they are carved has not been sufficiently analyzed.44 Through an examination of the boundaries between the forest and the garden sequence — the Garden of Planes, the Anteroom or Moss garden, the Reflection Garden and the Bird Marsh — and how these boundaries are experienced, the garden rooms can be interpreted as lenses for viewing the forest rather than as the primary subject of the walk. In such a reading, the four gardens constitute a design essay on the development of new landscape design grammars; one understands Haag as a perceiver of site potential, rather than an analyzer of systems.

The Bloedel Reserve forest is entered from a meadow; the threshold is marked with a large sculpted mound that marks the edge of construction disturbance along the forest/meadow boundary. The subsequently altered Garden of Planes was initially the most controlled and abstract of the series. Bounded by a Japanese teahouse and earthen mound, it centered on an earth sculpture of angular planes of stone. It was a place frozen in time, unchanging and obdurate. In contrast the Moss Garden, a short walk away, is a place where time does not stop. Lacking enclosing walls, it was cleared of much of its forest understory, enhancing visibility of the large stumps of harvested trees and fallen trunks on the forest floor. A carpet of non-native chartreuse moss was then introduced. Decay will slowly destroy this otherworldly place, half memorial to lumbering operations, half ode to Japanese moss gardens. Smithson’s entropy is operative here, as fallen logs decompose and turn into soil. If the Garden of Planes is characterized by unchanging form and abstract space, the Moss Garden is a place that “articulates space in order to articulate time.”45


45 Miller, The Garden as an Art, p. 39.
The dramatic contrast between the first and second garden do not prepare one for the adjoining Reflection Garden, where the forest is reduced to essentials: ground, water, sky, and perimeter trees. Beauty results from the separation and clarity of each element. Euclidean geometry is employed to mark center — a cut in the surface filled with rising groundwater — and edge — the exposed vertical trunks of the surrounding forest. Some distance away is the Bird Marsh, a light-filled watery realm, a habitat for birds where human visitors are voyeurs. This place has a clear center and edge, but neither is geometrically marked. Rather, the extent of an elder grove that grew in the aftermath of a forest fire marks the boundaries of the place, while an existing irrigation pool is expanded to form the pond at its center. A disturbed site in a disturbed site — a forest fire in a forest valued for its potential as sawn timber — creates a recognizable place within the larger forest. The small islands within this remnant of an early agricultural operation are now home to this “unnatural retreat” for birds.

At Bloedel, the disturbance of lumbering and fire are not cleaned up or beautified. Instead, the location and forms of the gardens are intended to reveal the nuances of the forest, initially perceived as a monolithic matrix of dark wet enclosure. Although this project could be criticized for making a disturbed site so hauntingly beautiful, such beauty is not achieved at the expense of telling the environmental history of disturbance there. Bloedel Reserve reflects an important step toward designing landscapes based on a paradigm of ecological disturbance rather than balance, suggesting that the discipline of landscape architecture might have to rely on new paradigms, substituting a disciplinary mythology of trauma and disturbance for one of healing. From this perspective, formal dichotomies between nature and culture are inadequate for creating landscape experiences.
Finding form in the formless: characterizing the experience of ecosystems

If Haag's designed landscapes within the Bloedel Reserve are analogous to filtered lenses that allow one to see the forest more clearly, a small, one-acre urban park in Toronto, the Village of Yorkville Park (1991-96), might be seen as a "Victorian collection box" for recalling the experience of distant ecosystems when in the city. In many ways, this project is a hybrid of the formal explorations of Walker and the site-specific and process explorations of Smithson and Irwin. This is not surprising given that its designers, Martha Schwartz, David Meyer and Ken Smith all studied and/or practiced with Walker at one time. While Yorkville Park, the search into giving form to environmental values shifted from a concern for process to an interest in the phenomena of an ecosystem: its textures, sounds, temperatures and smells. Within the repetitive spatial framework of a series of row houses on a city block, seventeen ecosystems are "collected." This urban park as ecological curio case reframes the ecology/art divide by making ecology the subject of a landscape as art work. It offers an alternative strategy for overcoming the idea that ecological concerns must result in formlessness, that the relationship between the two is always one of opposition and difference. Like J. C. Loudon in the nineteenth century and Roberto Burle-Marx in the twentieth century, Schwartz, Smith and Meyer advocate the recognition of landscape as art. Like Burle-Marx, Schwartz, Smith and Meyer bring native plants into the city and assemble them in clearly artificial groupings to urbanize nature and naturalize the city. While the designers would likely bristle at the moniker "ecological designers," their concept for Yorkville Park makes a significant contribution to ecological design by creating a rich phenomenal experience of nature that does not require one to leave an urban sidewalk to appreciate its aesthetic qualities. Within less than five hundred feet one can pass along seventeen ecosystems, spanning from upland conifers to lowland marsh. While such an experience can not be mistaken for the Canadian wild, in the same way that a zoology exhibit or a natural history museum installation is not mistaken for the jungle or a rainforest, it creates an aesthetic appreciation for its subject that could lead to empathy. A goal of this approach is to break down the divide between humans and nature so as to engender a greater sense of their interdependence. Here, environmental experiences are anticipated through the abstraction and objectification of ecosystems and the choreography of human movement through sensory and tactile spaces.

Like many contemporary designers experimenting with ways to give form to their culture's environmental values, Schwartz, Meyer and Smith look to the experience of the environment as a bridge between science and art, ecology and design. In order to give the landscape significant presence, they rely on form, movement in space and temporal fluctuations to create an environment that engages those who encounter it. Unlike their contemporaries who focus on the formal possibilities suggested by natural processes, they have concentrated on the aspects of nature that evoke a sense of wonder in humans: its ephemerality and grandeur, its infinite variety, and its phenomenal moments when light, air and matter interact to construct aesthetic experience. One might argue this rarefied experience has little to do with ecological design. Or, one might wonder whether John Dewey would think projects like Yorkville Park "restore the continuity between the refined and intensified forms of experience that are works of art and the everyday events, doings, and sufferings that are universally recognized to constitute experience." If so, the role of aesthetic experience as a tool for engendering environmental empathy might be considered more fully by all ecological designers.

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47 Louise Mozingo, in "The Aesthetics of Ecological Design: Seeing Science as Culture," Landscape Journal 16 (1997), 47, perpetuates this distinction when she focuses on the landscape at the "interface of the built environment and ecological systems."
48 Dewey, Art as Experience, p. 3.
Reflections on and projections of an unfinished project

American landscape architecture was profoundly altered by post-Earth Day ecological environmentalism. The profession grew in numbers, dozens of academic programs were founded and new types of commissions became available. The design process changed as site analysis became increasingly systematized and emphasized. Tensions developed between ecological planners and artist/designers over this emphasis and the degree to which creativity and environmental responsibility were compatible enterprises. Over the past two decades, landscape architects have crafted numerous approaches to reconciling this divide between ecology and design. The approach chronicled here expands ecological design to include the formal, the aesthetic and the constructed. Inspired by environmental artists and others who challenged modern artistic tenets, these landscape architects develop landscape aesthetics characterized by efforts to reveal and register the experience of place. They rely on a medium and a design vocabulary that refer to the material properties and phenomena of the land. These works are set in motion by the cycles and rhythms of human life and natural processes. Bodily experience, movement in space, fluctuating characters and temporal considerations permeate this type of landscape architectural practice.

The designer’s heightened role as the individual whose personal experience is the filter for editing and interpreting existing conditions leads to works of considerable aesthetic power and invention, yet this role raises questions about the audience for the works and the accessibility of the interpretation. If a phenomenology of landscape architecture results in built works that merely reveal a designer’s personal interpretation of a place, or that simply facilitate an individual’s private reveries, the significant role for landscape architecture as the art of creating a meaningful, lasting public realm is called into question. On the other hand, if a phenomenology of landscape architecture taps into the concrete experience of a place by its citizens, and if those experiences intermingle the cyclical rhythms of collective social life with natural events and phenomena, then this type of built work redefines what it means to be in the environment. Rather than comprising a surround, a “here” separate from “here,” these works immerse visitors in ecological experiences that are immediate, flowing in and through human life and constructions. This chain of events — from perceiving and revealing a landscape’s essential structure and character to creating an aesthetic experience of the environment and fostering a sense of belonging and understanding — provides a landscape architect with two important roles as an environmentalist. The more commonly accepted role is one of reflecting existing environmental values through site response, formal gestures and relationship to ecological and cultural contexts. Another role implied in the works reviewed here is one of projection: the potential for landscape architecture to engender ecological environmental consciousness. In such terms, the minuscule percentage of the earth’s surface that landscape architects modify for human use may be more significant for the values it perpetuates or changes than its acreage might suggest. Giving form and meaning to ecological processes through the making of landscape experiences has laudable goals: to foster design practices that engender understanding of humanity’s interdependence with nature and to stir ethical and aesthetic debates, without sacrificing significant form in the name of environmentalism.

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49 Between 1957 and 1996, the number of ASLA members doubled and the number of landscape architecture students tripled. See Landscape Architecture 48, no. 3 (April 1958): 169; Landscape Architecture 57, no. 1 (October 1966): 8. The ASLA estimates there are currently 30,000 practicing landscape architects in the United States, a ten-fold increase since the mid-1950s.
Thesis design is the culmination of a student's formal architectural education at the Taubman College of Architecture and Urban Planning; it follows a semester of independent work in which students undertake research into topics of their own choosing. More significant, perhaps, is the notion that thesis represents the beginning of their careers as architects, a trajectory in which an increasingly wide variety of options are available to them. Thus while the process of thesis formulation and design is fundamental to the search for rigorous and inventive approaches to design, it also enables students to prepare themselves for a professional world in which architectural practice is subject to continual reformulation and reinvention.

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Programmatic Potpourri

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Marketing and technology have accelerated the rate of consumption in Western society in recent decades. By consumption, I mean the processes by which products and services are created, bought and used. Through advertising techniques, marketing repeatedly embeds further meanings on goods and services. It develops a system of discourse that suggests constant innovation and accumulation of meanings in which our social life is immersed. The process of becoming is, then, the process of possessing. Technological innovation enables better communication and faster production methods and transportation devices that accelerate the dissemination of knowledge and goods, as well as the transformation of resources into consumer goods. The market's obsession with increasing volume and quality, as well as novelty, has become a global phenomenon due to the unprecedented synergy between marketing and technology. The intrinsic endurance of edifices, however, limits the possibilities of constant innovation in the field of architecture.

This thesis examines the potential for creating architecture that addresses issues of temporality, transformation and accumulation of meaning. Looking to consumer goods, this thesis proposes an edifice that is able to continuously incorporate multiple cultural, social and temporal meanings — an edifice that accommodates a pattern of consumption analogous to those of Western consumer products. I use the term *architetophagic* to indicate the architectural process of appropriating and recombining elements to satisfy the ever-changing desires of Western consumer society. The suffix -phagic, from the Latin *phagus* or the Greek *phagos*, denotes the act of eating or feeding on. The *architetophagic* process is then a means by which architecture feeds upon itself to generate a different kind of "new."

The consumer goods industry epitomizes the reinvention of the identity of a consumer product or service. The ever-changing image of Betty Crocker demonstrates how a brand can change its message over the span of a century, while maintaining the fundamental aspects of its identity. While her body position remains constant, the images change, transmitting messages that reflect differing, if not contradictory, societal expectations of a housewife. The latest version is a computerized composite of seventy-five women who embody the corporation's present standards of femininity, demonstrating how technology can aid marketing in creating unlimited brand identities.

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An example of architectural consumption, i.e. the use, appropriation and transformation of an edifice is the Ken's Nielsen flower shop in Ann Arbor. Originally a church, this building has accommodated different uses over the years, with only minor alterations. No attempt has been made to deny its original existence as a church, except to eliminate the cross and add windows to the towers. Inserting a new program in this space for worship results in an ambiguous edifice, where both programs are visible and evident at the same time. This dual "deterritorialization" allows past and present uses to co-exist not passively, but competitively, ultimately making the building both a ruin and a work-in-progress.

Consumption does not necessarily involve the destruction of an edifice or of a brand identity. Indeed, for a product to survive in Western consumer society, a delicate balance must be achieved between the old, which generates recognition through association, and the new, which continuously challenges and transforms the meanings of goods. Peter Eisenman extends this concept of accumulation of meanings:

The new, rather than being understood as fundamentally different from the old, would instead be seen as slightly out of focus in relation to what exists. This out-of-focus condition, then, would permit a blurring or displacing of the whole, which is both old and new ....

Such layering of programs would be the catalyst for this "out-of-focus condition," where one would not be able to clearly distinguish between old and new. Two major consequences result from combining old and new programmatic layers in a building. First, the overlapping introduces the dimension of time, where old layers speak for historic periods and new layers reflect the anxieties and complexities of contemporary society. Second, the resulting new relationship of figure and ground, matter and void, fosters multiple readings and interpretations, defined and reinvented by each consumer or building visitor.

An analysis of cereal boxes, a commonplace North American consumer product, served to test the hypothesis that overlapping elements stimulate an interaction that creates new information. I sought elements that were consistent across variations of the product in question to test whether they were capable of generating patterns or "codes" that could be appropriated and manipulated. Identifying and extracting the hypothetical "codes" from each cereal box, I applied these patterns to a series of acrylic plates, giving each a distinct color scheme. The introduction of transparency not only afforded simultaneous views of the plates but also generated new colors and provided an opportunity to reinterpret the cereal's identity: apple krispies, bran smacks, mini pops.... The second manipulation extrapolated the "codes" from the realm of the cereal boxes and inserted them into imaginary scenarios. This operation stimulated the observer to question the images, to mentally search for memories of those images and to invent his or her own history aligned with the displaced images.

The cereal boxes demonstrated that a broad array of "codes" would, rather than complicate the result, produce a complex and meaningful one. In an analogous manner, the architectural investigation combined an existing site and a new program to present information on a number of levels, stimulating change, interaction and adaptability of elements. The Ann Arbor site sits at an inflection point between four zoning conditions: residential, commercial, institutional and mixed commercial and residential. The corporation IFF (International Flavors and Fragrances) was chosen to occupy the exiting edifice because the company possesses various programmatic requirements: management offices, research garden, chemical laboratory and a boutique. IFF's products are associated with no particular brand recognition; moreover, they are physically intangible, allowing for multiple interpretations through personalized experience.
Similar to the results achieved with the cereal boxes, the architectural investigation adopted representation techniques capable of generating a system of information through interactive layering. The model components interlock, providing connectivity between programs. Rather than a linear, sequential development, drawings and models operate under a retroactive, cumulative system where initial and final interventions are indistinguishable, and where past, present and future coexist and interact.
Through a series of operations that include rotation, addition and torsion, a "street seeker" is developed to connect the edifice with major commercial areas surrounding the site.

Operable doors allow the entire street façade to "open" to the city. As the street consumes IFF, the company also consumes the city. The smells emanating from the boutique appropriates the immediate street, challenging the paradigm of property limits.
From left to right:
Ceiling panels fold into wall panels, reinforcing the ambiguity of conditions in the workplace. Wood framing allows the management office walls to be easily consumed, with openings reconfigured as necessary to accommodate changing needs. The facade’s polycarbonate finish offers a reciprocal visualization of events from the street through the entry ramp to the offices, while plywood panels on the interior mask the shifting infrastructure. A peripheral circulation zone creates a buffer condition between the sidewalk and workplace. This in-between condition consumes an existing stonewall and windows are generated to brake the ‘shield’ of the edifice.

The garden is designed to allow exploration, investigation and visualization of the entire project. The landscape crawls around, inside, on the top and under the edifice. The landscape permeates the edifice. Trees emerge inside the laboratory and vent stacks invade the garden, generating contradictory hyper-adjacencies, to be contemplated by customers and visitors.
Symbolism without Symbols

German Spiller

In the past, symbolic intentions spurred expressive form because the architect knew what meaning to express. In a democratic, agnostic society these meanings have to be rediscovered and explicitly formulated by architect and client, or else the form will be insignificant.¹

We live in a society based on mass consumption and the principle of obsolescence—a society in which the traditional values that grounded the emergence of the United States as a nation have been challenged and devalued, leading to the emergence of superficial standards that transform the individual into an insatiable consumer and absorb him or her in the mechanics of an endless cycle of desire, earning and consumption. Advertising constantly bombards us, inducing us to seek commodities that are soon replaced, due to evolving market aspirations.

The architecture that embodies our zeitgeist has become, in many cases, standard, serial, repetitive, uniform, precise and banal because, as a commodity, architecture is often replaced when it becomes obsolete. As a result, it is frequently difficult to establish the qualitative and symbolic differences between a gas station and a church, a grocery store and a governmental building. If a symbol suggests an idea or quality by resemblance or convention, and if our common beliefs are based on the fickle messages of the market, how is it possible to elaborate a symbolic program for a public building? Based on our everyday urban landscape, what are the constants that emerge as symbols of what we, as a civilized society, represent?

Buildings of civic relevance have historically symbolized the political, economical and cultural ambitions of an epoch. The United States Capitol embodies the spirit of liberty and democracy that was the cornerstone of the emerging nation. Notre Dame in Paris exemplifies the domus dei (house of God) and the porta coeli (gate of heaven), symbolizing the dwelling where God is to be found; it is a sacred place

where pilgrims seek the treasures of the heavenly kingdom. Even Victorian homes, through their spatial arrangement and iconography, symbolize a social order based on gender roles and social status.

This thesis examines the phenomenon of consumerism as a civic religion to which we devote our temples. It asks how the architecture of these temples of consumption uses popular and/or religious symbolism to engage individuals in the ritual of shopping. By introducing a Dollar Store and a bank within a Social Services building, it seeks to challenge the dichotomy between public and private space in order to demonstrate how the American form of advanced capitalism, like Catholicism in Latin American cultures, shapes our rituals and therefore the dynamics of our public spaces.

The New Temples of Democracy

Governmental buildings have traditionally been the sponsors of civic life, yet significant spaces of civic relevance, housing governmental, religious and/or civic institutions, have become increasingly rare. The public sphere has shifted from the civic domain of the city to the realm of consumerism. This phenomenon has generated a landscape dominated by standardized boxes that host the vast majority of our social encounters. The disappearance of vibrant civic spaces configured by religion, government and justice coincides with the lack of physical contact between people and the isolation of discrete governmental agencies. Today we no longer identify government with a physical setting but rather with a paper form that we download from the Internet, receive in the mail or at best pick up from the nearest IRS or INS office, or whatever official institution we need to contact. The spaces in which these contacts occur are alarmingly banal, ordinary and bureaucratic. These buildings are often generic enclosures that meet the minimal square footages, egress requirements, safety regulations and circulation demands that their functions require.
The Embodiment of Bureaucracy

The site for this intervention is the Floyd J. McCree Courts and Human Services Building in Flint, Michigan. This building currently provides social assistance to the lowest social classes from both Flint and the rest of the county. In this setting the underclass encounters the benefactor hand of a government that wants to synchronize it with the rest of society. The process reflects an attempt to not only provide a minimum level of dignity through financial and medical assistance, but also transform the underclass from an idle economical sector to potential consumers.

A narrow circulation zone that leads through the mass of bureaucratic offices is the only area accessible to the general public. This zone, where welfare applicants and recipients move from one office to the next, suggests analogies with a bureaucratic assembly line. County authorities responded to my request to photograph and survey the entire building by allowing me access to this area alone; the office space beyond the counters was only visible through bulletproof glass.

Two Experiences — Two Narratives

Bureaucrats and requesters co-exist within this landscape. The typical experience of the bureaucrat is as monotonous as the setting in which he or she works. Chauncy Hare argues: “The thing that strikes you immediately about the jobs at the Social Security Administration is the boredom. Think about paging through manila file folders after manila file folders eight hours a day, five days a week, year after year. The file folders are contained in rows after row of file cabinets — half a mile long.” The rituals awaiting the welfare requester — arrival, waiting in line, filling out forms, responding to questions from social assistants, undergoing interviews, awaiting ap-

"The thing that strikes you immediately about the jobs at the Social Security Administration is the boredom. Think about paging through manila file folders after manila file folders eight hours a day, five days a week, year after year. The file folders are contained in row after row of file cabinets — half a mile long. When I photographed at the Western Program Center in Richmond in 1978, I thanked my lucky stars I wasn’t working there. Two years later I was paging through manila file folders after manila file folders in my new job at the Environmental Protection Agency."

This photograph was made by Chauncy Hare to protest and warn against the growing domination of working people by multinational corporations and their elite owners and managers.

2 Chauncy Hare, This was Corporate America (Boston: Institute for Contemporary Art, 1984), p. 64.
proval and, finally, receiving financial assistance — are just as banal. The moment of maximum tension occurs at the counter, the pane of glass that separates employee and applicant.

The ritual of waiting and negotiating assistance from the government is similar to the rituals performed in the Catholic faith during the sacrament of confession. The believer waits in line for his turn to confess his sins. After he approaches the confessional, he kneels and tells his faults to the priest, expecting his soul to be healed in order to participate in the sacrament of communion. Likewise, the welfare requester approaches the counter and spells out his needs in front of those waiting in line (audience), seeking resolution from the federal employee. Sitting behind the glass, the bureaucrat decides whether assistance is to be granted. Unlike the Catholic confession, both individuals are subjects of observation. In a setting like this, the "one" (requester/employee) is never independent of the "many" (the line of co-workers/superiors); therefore the human exchange becomes almost robotic.

By intervening in the conventional counter design, this proposal enables the individuals to either side to separate themselves from the "many." When matters of private concern need to be discussed, employee and requester can move into a contiguous condition where they can see each other's body in full, discuss matters in private and shake hands, making the separation between the two less clear-cut.
Disrupting the Order

To break down the conventional distance that the political bureaucracy maintains vis-à-vis its constituents, to produce a new public space and to elevate the quality of the existing spatial conditions, a pair of mundane programmatic elements—a bank and a Dollar Store—are inserted in the existing Social Services building. The Dollar Store is not intended primarily to sell commodities to bureaucrats, welfare recipients and other clients; instead it provides a space of leisure that sponsors encounters that supercede the rigidity of the conventions established at the counter and at the pane of glass. It also addresses the fact that once the requester leaves the counter with a check in hand, he or she becomes a potential consumer.

The insertion of these programs disrupts the heartbeat of the office setting and its mundane rituals of waiting. The proximity of office space to lounge area suggests the potential to transform a desk into a stretching platform or a picnic table. The insertion of outdoor settings with grass and natural light encourages encounters of a different nature. A new pane of glass denies access to those who were previously denying access. With the store, moreover, rituals of waiting and working are transformed into a new condition of leisure.

This new scenario exposes the former condition of estrangement between the operators of the public bureaucracy and its recipients to public scrutiny. The publicly inaccessible building mass is contested through discrete architectural interventions that spatially confront existing social and economic hierarchies and preconceived biases concerning the underclass in America by eroding and challenging the wall as a physical barrier.
On the second floor, a garden interrupts the order of the offices, inviting the welfare requesters to enter an alternative space for waiting. Views through the offices and the store extend the apparent limits of the waiting room. A "security camera" view from the garden exposes the wide array of commodities offered in the store as well as the rows of manila folder files, visible through gaps left when the items of merchandise are sold out. The "intrusion" of the store into the waiting room makes it possible to see other people shopping, imagine future purchases and move away from the mute TV.
From the ground floor, cabinets emerge into the store; thus the storage system for manila folders also serves to showcase products. The aisles shift in height to allow bureaucrats and welfare requesters (now consumers) to encounter each other when one is choosing a product and the other is filing. These instances not only animate rituals that tend to be subconscious, but also symbolize small potential differences between state bureaucracy and free enterprise.
This proposal draws upon the site’s potential as a space of congestion to evolve into a space of civic relevance. While working within the existing extrinsic and intrinsic conditions of the found “landscape,” it introduces new programs to ignite this condition. The result is not intended as a multi-use hybrid. Instead it is a new type of public space, which raises public consciousness of the implicit social and psychological dynamics of the rituals involved and symbolizes the transition from non-capitalist to capitalist, from not chosen to chosen, from mass to individual and from the procedural to the unordered.
In the early 1980s the College of Architecture established the Fellowship program to bring talented individuals to the faculty who might contribute to the curriculum in innovative ways. Appointed Lecturers in Architecture for one academic year, they are given release time to devote to scholarship and/or creative activities, in addition to teaching. The William A. Oberdick fellowship supports individuals who show promise in building science, information technologies and design. The William Muschenheim fellowship supports design instructors who are embarking on an academic career. The Walter B. Sanders fellowship encourages experienced practitioners with an interest in architectural education to pursue both teaching and research.
At the dawn of the Information Age, we need to imagine new potential uses for the waste products of the Industrial Age. In the coming millennium, innovation will be measured by our ability to imagine something old in a new light. For the past few years, Swift Lee Office (SLO) has been developing a system of furniture using light gauge steel studs, commonly used in the construction industry as an alternative to traditional wood studs. We chose the material particularly for its contentious relationship with its wooden ancestor. In the Stud Series we are proposing a new reuse for steel, one of the most plentiful waste products of the last century, in an attempt to challenge conventional and symbolic notions of material appropriateness and use.

My research as the 2001-2002 Oberdick Fellow at the University of Michigan focused on the implications of CAD/CAM and rapid prototyping technology for architectural design and education. To take advantage of this period of residence in a major man-
ufacturing area, I was interested in exploring the region’s industrial resources and the potential for collaboration between architectural research and manufacturing. This has led us to the use of CAD/CAM technologies being developed by the construction industry for the Stud Series. Many of the pieces illustrated here were produced using a state-of-the-art CNC sheet metal roll-forming machine. Each piece was shaped, pre-punched and cut to length directly from our CAD drawing, resulting in minimal material waste and extremely economical production.

**Stud Series™ Prototype**

Steel studs are strong, lightweight, inexpensive, durable and easy to work with. They offer material consistency and uniformity, resulting in less waste during manufacture. Most importantly, they are made from recycled steel (25% - 100%) and are themselves 100% recyclable. Using a standardized and repetitive unit such as the steel stud offers design flexibility and streamlined manufacturing. Adding more or fewer studs to a chair or shelving unit can readily produce customized configurations. The
pieces can be shipped ready-to-assemble in flat packaging and can be easily disassembled for recycling. We have also developed innovative fabrication techniques for folding and bending the studs that increases strength and reduces the number of components.

**Steel**

More steel is recycled in North America each year than aluminum, plastic and glass combined. Steel scrap from canned goods, appliances, automobiles and construction materials is ubiquitous: finding new uses for it conserves natural resources and keeps it out of landfills. While new steel is energy-intensive to produce, it can be recycled indefinitely without compromising its material properties. Therefore, the initial energy invested can be reused in future generations of recycled steel products. Moreover, the energy used in recycling steel is drastically less than that used in producing new steel. The last twenty-five years have also seen the development of new manufacturing technologies resulting in dramatic increases in energy efficiency and reductions in emissions for steel production. Recycling rates for steel consumer products continue to rise, and new steel-making processes facilitate the use of scrap steel in all types of steel manufacturing.
CAD/CAM Technology and Mass Customization

[W]e might locate the emergence of the first true technocracy in England in the latter half of the eighteenth century—let us say with James Watt’s invention of the steam engine in 1765. From that time forward, a decade did not pass without the invention of some significant machinery, which, taken together, put an end to medieval “manufacture” (which once meant “to make by hand”).

Many argue that the first example of CAD/CAM technology was the invention of the Jacquard Loom in the middle of the nineteenth century. Complex woven patterns were controlled by punched cards allowing multiple custom configurations. In his 1987 book Future Perfect, Stanley M. Davis refers to the idea of mass customization. According to Davis, mass customization is a paradoxical concept with very practical economic consequences. He reminds us that mass customization has long been a factor of our daily lives, exemplified by such items as custom suits made by Hong Kong tailors to Cabbage Patch Dolls. Lens Crafters has been mass customizing lenses while Home Depot has been mixing custom color paints with the help of computer technology. In agriculture, we have used mass-customized fertilizer for many years, and, of the 850,000 Volkswagen Rabbits produced in 1986, there were only 15,000 duplicates. What has changed with CAD/CAM technology is the elimination of the wait. It is now possible to produce instantaneous change.

2 Stanley M. Davis, Future Perfect (Reading, Mass.: Addison-Wesley, 1987).
After more than two hundred thirty years of industrial production and one hundred years of computer controlled manufacturing, is the rebirth of manufacturing in the medieval sense possible within the context of contemporary mass-customization? We no longer have to think of goods and materials in such a fixed and predetermined way as in the age of industrialized mass production, when tooling set-up costs controlled the break-even point. We can now economically produce works that differ in quality as well as quantity as we move from the division between rapid prototyping and mass production into the realm of limited rapid production.

This is not to say that we should completely do away with the standards of industrial production. With the Stud Series, it was our intention to work with a predetermined unit/industry standard and to invent ways to transform an off-the-shelf product. What has changed is that architects and designers now have greater opportunities to determine the shape and form of these products. We are moving away from an over-reliance on Sweet’s catalog towards design-build in the arts and crafts tradition, where architects, designers and fabricators can work together directly. With this new technology, we can create more flexible, affordable and customizable designs that reintroduce ambiguity, complexity and subjectivity into the industrialized production of space.
washed out
Mireille Roddier
Bligny-en-Ouche, Côte d'Or, Bourgogne, 1832
enduring remnants of the obsolete

It has been more than fifty years since running water first made its appearance in the daily life of the French household. The invention of the boiler and the domestic washing machine ended centuries of activities at the public washhouse, or lavoir. Only a few generations later, the lavoir is often considered an outmoded form of public infrastructure, a relic of another era, evocative of different, and for the most part undesirable, attitudes towards work, time, public life and gender. Unusable and socially irrelevant, these buildings have faced abandonment, vandalism, decay and destruction.

Among public buildings of the French rural heritage, the lavoir is the most discreet and humble; though often beautiful, it is seldom remarked upon. Although austere in form, each lavoir is unique, possessing its own character. Its architecture reflects the basic need for shelter and flowing water, with local and regional variations deriving from the use of indigenous materials and building traditions. Lavoirs resonate with the sensorial and social dimensions of the laundresses’ tasks, yet unused and empty, they convey an impression of mystery and solitude, replete with ghosts and memories. Lavoir interiors of mysterious beauty are often secreted behind anonymous building envelopes that filter daylight through their apertures to reflect off the water’s surface. These simple facades hide three hundred years of women’s social encounters, hard work and spirited conversations. As a result of its simple functional requirements and its endurance through periods of intense political and social upheaval, the typology reveals a dense history of building technology and formal symbolism.

Whiter than white

Lavoirs first appeared as a building type in 17th-century France in direct response to emerging health concerns. Growing fears of the ill effects of water ended the popularity of public baths and steam rooms. Associated with pleasure more than with cleanliness, public baths lost their respectability with the succession of plague epidemics from the 1450s to the 1560s. Warm water was thought to be responsible for opening pores and letting in illness. This belief contributed to the disappearance of steam rooms, branded by the church as places of decadence and debauchery, and a general fear of water prevailed for nearly three hundred years.

Public health first became a prime political issue under the reign of Louis XIV (1643-1715), when a growing concern with cleanliness and health paradoxically coincided with the categorization of water as dangerous. Wiping the body replaced washing. Cleanliness was a visual concept. Clothes were believed to absorb all of the skin’s impurities; thus the whiter one’s linen, the cleaner one appeared to be. Attire was divided into two categories: outerwear and underwear. Underwear or linens were made of serge, hemp or the most expensive alternative, actual linen. Only under-
wear could touch the skin, and it was changed more or less regularly, according to the wearer's social status. Unlike underwear, outerwear did not necessitate washing since it did not come in contact with skin. Cleanliness was thus associated not only with physical and moral well-being, but also with wealth. A desire for exposing clean white garments induced changes in fashion, such as excess underwear overflowing at the sleeves and collars to reveal one's shade of white.

The construction of lavoirs followed closely upon the cult of white linen. Architecturally significant examples were initially built for the elite on private property, generally within the vicinity of the château or the church. For the remaining rural populace, riverfront platforms were adapted into vernacular lavoirs, few of which remain.

Going public

By the end of the 18th century, the plague had become a distant memory and the virtues of water reestablished. With the cholera epidemic of 1832, water was given a new role; as air was thought to be conducive to illness, it had to be cleaned and this could be done with water. Streets were watered down regularly, and buckets of chlorine were left outside to annihilate stench. Proximity to running water was believed beneficial to air quality; in Paris, to maximize exposure to the Seine's surface, the housing that lined its bridges was destroyed.

Water-related practices were initially considered luxurious and only affordable by the privileged classes. Hydrotherapeutic centers in towns, such as Forges-les-Eaux on the Channel, Cauterets in the Pyrénées or Spa in Belgium, were praised for their curative treatments and were popular destinations for the affluent. Public baths were patronized only by the elite or by wealthy travelers. Bathtubs appeared in private residences during the late 1700s, but return water inundated the sewage pits, which had to be drained regularly. The entire infrastructure for the water system was reevaluated and new water circuits imagined as the French concept of luxury shifted from visual opulence to concealed convenience. Municipal funds

were reallocated as the need for new infrastructure took priority over monumental civic buildings. Issues of water distribution were coupled with concerns about its disposal. Street sections were redesigned to accommodate water runoff in gutters, but it wasn’t until the cholera epidemic of 1849 that more substantial changes were envisioned.

As a consequence of unequal access to water, class distinctions were visually apparent and cleanliness became emblematic of affluence. The 1849 epidemic, which killed 20,000 Parisians, highlighted this disparity. Due to the emerging sanitation in the wealthy outlying neighborhoods, this epidemic devastated the city’s overcrowded center, the barricaded territory of the laboring classes, contributing to greater awareness of the extensive poverty in the newly industrialized city. The concept of cleanliness evolved from a primarily visual phenomenon to one involving issues of health, and an associated word entered the French vocabulary: hygieue.

Following the coup d’etat of 1851 and the beginning of the second empire, Baron Georges-Eugène Haussmann’s engineer, Eugène Belgrand, configured an impressive water and sewer network system for Paris. Separate conduits divided washing water from potable water. Affordable public baths and free lavoirs appeared in every neighborhood. Similar improvements soon took place in the provinces after the government made the extraordinary sum of 800,000 Francs available to provincial towns toward construction of public baths and lavoirs. Public sanitation efforts extended beyond the construction of infrastructure; health education was emphasized, and public school manuals included new hygienic principles, which evolved from Louis Pasteur’s revolutionary germ theories.

From structure to architecture

In most French villages and small towns, there are few basic public building typologies; the church crowned by a steeple is the most prominent early example. With the advent of the republic, the town hall (mairie) and the community center (salle-des-fêtes) emerged, followed by the public school, the market hall and the lavoir. The architecture of these minor public buildings was a direct reflection of the town’s wealth. Thus, during the 19th century, the architecture of rural lavoirs shifted from minimal functional expression to symbolic embodiment of civic pride. The neoclassical model was thought to best reflect the civic duty of cleansing the people. Although the specific form of the lavoir varies according to site constraints, such as means of access to water, proximity to the town center and availability of local materials, each embodies the general social and technological milieu in which it was created.

Down by the river

The first rural lavoirs were vernacular structures built directly on the river. The main concern, particularly in the north of France, was to provide a shield against the cold. At Méreville (Essonne) the enclosure was maximized and the roof lowered to protect kneeling laborers, while optimizing daylight on the slanted stones to help locate stains. Although these early structures were generally outside of town and purely functional in form, an architect’s hand was occasionally visible, as with the lavoir of Vanvey, built in 1824 according to the plans of Dijon architect Antoine Chaussier.

A primary factor in the lavoir's form was the periodic shift in the river's water level. Designs that address this issue range from the purely architectural to the mechanically engineered. Architectural examples include the lavoir of Avigny, which has a four-bay façade that steps up to the access door. As the river rises, the usable entry shifts from one bay to the next, while portions of the interior become submerged. The lavoir of Quenoche is a variation on this concept. Construction of the lavoir of Voutenay-sur-Cure, built in 1827, involved rerouting the river and creating an artificial island on which to sit the building. The river flows symmetrically to either side as well as through the structure, where a double-stepped basin accommodates a range in water level.

Mechanical apparatuses are apparent in lavoirs scattered along the banks of the Eure, used by the tanning industries of Chartres. Adjustable platforms hung with chains or steel cables from a mechanism of winches and pulleys allow the working surface to be adjusted relative to the water level. This mechanism often resulted from upgrading older structures, such as the lavoir of Mirebeau-sur-Bèze, where the platform engineering was refitted in 1904.
Going to the source

Many hill towns lacking an adjacent river built lavoirs directly over a spring. These vaulted structures, often embedded in a hillside, are particularly prevalent in arid regions such as Provence and the lower Alps. Because their flowing water is fresh and pure, these lavoirs are often part of a complex that includes a potable water fountain and trough. The lavoir of Blacy emerges out of the ground a long distance from town. It is traditionally dated to the 12th century, which would make it one of the oldest extant lavoirs in the country. Over the years, the highly calcareous water created an amorphous aggregation of sediment around its water inlets.
Doing laundry below grade

In towns lacking a nearby spring or stream, lavoirs were excavated from the ground and laundresses traveled down to the level of the water table. Because these could be as deep as fifteen feet, limiting their access to natural light, such lavoirs often include an impluvium roof. The open segment of the roof admits natural light; its slanted sides protect the laundresses from winds and rain, while collecting rainwater and directing it into the circulation system. Many of these subsurface lavoirs are almost invisible from the street, except for their rooftops emerging from the ground. Their interiors are often unusual, reminiscent of India’s step-wells and other inhabitable wells, such as Orvieto’s Pozzo di San Patrizio, which descend to water sources far beneath the ground. As engineers devised pumps and canalization systems enabling this type of lavoir to exist at ground level, its form grew increasingly independent of its site. The atrium form of lavoir with an impluvium roof remained popular, however. These austere windowless lavoirs have spacious, brightly lit courtyards lined with colonnades that surround shimmering central water basins.

Temples to Laundry

With new systems for pumping and channeling water, the form of the lavoir became independent of natural water sources. Once flowing water could be achieved in any location, a broader range of forms was possible; these were no longer conditioned by site constraints, but responded to broader social needs. As the lavoir came to reflect a town’s modernity, its wealth and the cleanliness of its citizens, its external form became increasingly independent of its interior. Function was expressed on the interior and symbolism on the façade.
Following the discovery of Pompeii’s ruins in 1748, Parisian architects developed a penchant for temple-like structures and neoclassical ornament. Provincial architects, eager to follow Parisian fashion but short on monumental commissions, found an appropriate venue for this formal expression in the lavoir. By 1820, communal resources, which had been mobilized under the first empire for the Napoleonic campaigns, were reallocated for infrastructural improvements, and new lavoirs appeared throughout the country. Beginning in the 18th century, architects were regularly entrusted with such civil engineering projects, due to the royal administration’s endorsement of the profession to supervise provincial expenditures on public works.

Lavoir-temples first appeared in the Franche-Comté, where Claude-Nicolas Ledoux designed bridges, roads, fountains and troughs, in addition to lavoirs, and introduced a formal sensibility rarely found in such rural locales, raising architectural standards throughout the region. Healthy rivalries soon arose among neighboring communes and lavoirs became prime manifestations of the town’s sophistication and wealth. As a result, the most remarkable lavoirs are found in clusters, which are especially dense in the Franche-Comté region, specifically in the Haute-Saône, a department made rich by exploiting its dense forests for wood production. Architects of the Haute-Saône were particularly fond of the Palladian Serlian motif, used repeatedly throughout the department. Other regions of exuberant lavoir architecture and equivalent wealth are the wine valleys, specifically the departments of the Yonne and Côte-d’Or in Burgundy, as well as Bordeaux (the Bordelais).

In the South of France, freestanding lavoirs maintained a lower profile and retained much of their vernacular character. The Midi-Pyrénées, Languedoc and Provence are not prosperous wine-producing regions, and their warmer climate did not necessitate enclosure of the lavoir, which often consisted of a simple water basin that might be covered with a freestanding roof. Owing to their independent roof structures, these lavoirs are autonomous open-air pavilions, rather than buildings. They offer protection from sun or rain, but not wind. By thus exposing the laundresses to public view, the southern lavoir renounced the sober civic aura of the Franche-Comté model in favor of the visible reality of working class women with their crude vocabulary and penchant for gossip. Neverthe-
less, the sight of stones marked by centuries of demanding physical work commands the dignity and respect associated with the ruins of ancient Roman monuments.

**Unlikely programmatic fusions**

Because the expenses involved in the construction of new lavoirs often taxed a village's limited resources, a range of dual-function buildings emerged. The most common, and ironically logical, is the lavoir-mairie, which combines the two most prevalent civic building programs, lavoir and city hall, into a single structure. This unlikely combination served to compensate for the lack of respect given to habitués of the lavoir by providing villagers a structure that simultaneously reflected greater civic pride. It also provided the governing body of a town with an unrivaled edifice, a sensitive issue in villages where the architecture of the new lavoir often surpassed that of structures used by more esteemed villagers. Lavoir-mairies are found exten-
sively throughout Burgundy, and there are several in Franche-Comté. This political strategy had variants to please specific user groups, and throughout the country public functions were paired with the lavoir under a common roof. In Sennevoy-le-Haut, the lavoir is built under the community center (salle des fêtes). The town of Reulle-Vergy (Côte-d’Or) houses communal archives above the lavoir, while in Sœuvres (Yonne) and Dissangis (Yonne), it is paired with the public school. The beautiful complex of Jaugey (Côte-d’Or) combines a fountain with a two-basin lavoir framing a chapel to Saint-Fiacre. The gurgling of flowing water mixes melodiously with the sound of the bell crowning the campanile, making this elegant edifice an unusual union of typologies.

Today public functions such as the post-office or office of tourism might occupy the upper level of a lavoir, although it is clear that such spaces were originally intended for different public functions. Even residences occasionally exist above lavoirs, with multiple examples in the town of Chartres (Eure-et-Loir).

**Gendered spaces**

The monumental façades of the Franche-Comté lavoirs, with their classical proportions and public arcades, reflect the aspirations of those who facilitated their construction: civic leaders, architects, engineers and workers, most likely all men. These dignified exteriors only enhance the contrasting effects of the soft, dark, humid spaces within that constitute the women’s sphere.

The story of the washerwomen – the laveuses or lavandières – is worth telling. Known for their uncensored gossip and feared for their knowledge of the townspeople’s intimate life, these women held considerable power among the local populace. Legends depicting the lavandières as crazy witches express a collective need to destroy their credibility. The life of the lavoir remains active in the memories of many French villagers, and mention of the lavandières is part of everyday expressions and stories. Among the rural populace, the lavoir is likely to invoke taboo connotations of the lavandières, rather than appreciation of its architectural merits. These associations might explain why so little effort has been made toward their preservation. As Diane Ghirardo argues of such structures:

> [w]e must uncover spaces, spatial practices and histories that concern women above all, with the argument ... that through social practice, spaces are both configured and acquire meaning... Such a historical approach allows us to recover histories not only of some exceptional buildings, but also, insofar as possible, structures and histories that have not been preserved precisely because of their associations with women.

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Preservation of rural patrimony

Most remaining lavoirs are in remote villages that have seen little new construction in recent decades, whereas those in larger towns and cities were destroyed because they were deemed to waste valuable public land. The lavoirs illustrated here were found in extremely small and isolated villages. They are rarely seen or visited by anyone outside of the local inhabitants, upon whose care and maintenance they depend. Most are unused, although many lavoirs constitute the village’s most significant building. In such rural locales, there is no need to destroy them, since land is plentiful, but if branches or leaves were to clog the water conduits, local flooding would occur. They require a minimal level of maintenance, usually provided by a local resident.

What is to become of these water structures? In creating the Commission of Historic Monuments under Louis-Philippe in 1830, Prime-Minister François Guizot sought to preserve representative examples of French architecture. The commission’s original goals were not only to insure preservation of every monument the inspectors deemed worthy, but also to catalogue them. This inventory coincided with the first generations of travelers and tourists, which influenced the building types selected: civic monuments; churches and abbeys dating from Roman to medieval times. In 1960 Minister of Culture André Malraux began to include non-monumental examples of patrimony, specifically the 20th-century residential and institutional work of Le Corbusier and Auguste Perret. In the mid-1980s debates between historians and ethnologists concerning the purpose of preservation prompted a shift in attention from monumental masterpieces to buildings reflecting broader social values.6 Lavoirs, windmills and other threatened building types began to acquire
official merit as witnesses to lost customs. During this period, some of the most significant neoclassical lavoirs became historic monuments, such as the lavoir of Argenteuil-sur-Armançon (Yonne).

There are both advantages and disadvantages to the designation “monument historique.” Once a building is so classified, it cannot be destroyed. Neither can it be renovated or repaired until a commission led by an official architecte des monuments historiques has conferred its stamp of approval, relegating restoration expenses to the state. The process of obtaining such coveted classification is arduous, but once it is accomplished, villagers who might be eager to contribute to the restoration of their local lavoir are no longer able to do so. Implementation of this regulation two decades ago would have prevented the destruction of some beautiful lavoirs, as well as the mutilation of others through thoughtless conversions. Now that expert permission and state funds are required to make roof repairs, however, the result is often eternal existence rather than healthy longevity.

Fortunately or not, lavoirs are rarely classified historic monuments. Most receive some level of attention from the villagers, ranging from decorative geraniums hung between their arcades to intensive masonry repairs. Others have been sold to individuals, and interesting cases of adaptive reuse have resulted, such as a café-bar, a pool hall, a communal hall, or even an art gallery, found in the lavoir of Mougins, an affluent village near Cannes.

Because the lavoir emerged under specific historical and geographical circumstances, it is a uniquely French institution. As a distinct architectural typology, it captures the emerging distinction between domestic and public realms, reflecting a particular moment in French history. Like a bent tree at the edge of a windswept landscape, the lavoir gives direct expression to the forces of its production and environment.

Portions of this essay are to be included in a book on the French lavoirs forthcoming from Princeton Architectural Press (2003). Research and documentation of this project were supported by generous grants from the Graham Foundation for Advanced Studies in the Fine Arts, the Western European Architecture Foundation and the University of Michigan’s William B. Sanders Fellowship.
Gaining ground:

Two mountains in one: utilitarian and romantic
Design in response to multiple perceptions of nature

This two-part research project begins with an existing conflict between local development interests and national preservation interests in Norway. A mountain of gneiss is the site of this conflict and the players are many. A local developer who wants to exploit the mountain’s material value by creating the largest quarry in Europe is hindered by the Norwegian Department of Environmental Affairs, which proposes to include this area in a national park. This conflict draws the attention of three other players. The local community, led by their mayor, supports the developer’s proposal, seeing the quarry as a way out of the village’s financial problems, while an unlikely coalition of tourist industry representatives and university-based researchers oppose the quarry. The tourist industry argues that the loss of this precious natural resource would be detrimental to local businesses, whereas geologists seek to preserve the mountain for its geological significance. This conflict highlights the differences between local interests, desiring immediate economic gain from the mountain, and national interests, aspiring to leave it untouched. Can the romantic conservationist and the utilitarian developer coexist? Can one combine the space of the tourist with the domain of the researcher?

By investigating this real conflict between local population and national authority, between utilitarian and romantic views of nature, and by demonstrating that how we look at nature is indeed evanescent, I propose a third way out that combines these perceptions of nature. The proposal allows multiple natures to coexist and sometimes coalesce in a space that is simultaneously preserved and developed. It demonstrates, through models and drawing, how quarrying, tourism, research and local industry can exist in a symbiotic relationship throughout a thirty-year development process. Moreover, this third way of perceiving nature would benefit all players in the conflict by cutting their losses while simultaneously gaining new ground.

Kristine Synnes
The mountain is situated on the southwest coast of Norway, a region characterized by its glaciated terrain. In this dramatic fjord landscape, steep mountains dive into the sea and the population clings to a narrow strip of green between the mountains and the fjords. The terrain does not easily accommodate land modes of transportation, since one has to travel over mountains and traverse fjords, but unlike many other areas of Norway, the region has a distinctive, warm and dry microclimate that has led to its nickname “fruit gardens of Norway.”

The population makes its living from fishing, farming, tourism and industry related to hydro-electric power. The area has had difficulties adjusting to the global economy and fails to meet the aspirations of the younger residents, who seek work in distant cities after earning college degrees. The problematic transition from nature-dependent industries to a new economy is manifested in the area’s conflicting views of nature.

From the point of view of a local developer, the mountain is a valuable mineral resource. Its granite has ideal properties for developing gravel. In addition to being hard, it is also lightweight and therefore easy to ship to destinations in central Europe. Recognizing this opportunity, the developer proposed to create the largest Northern European quarry on the site. The mayor supported the developer’s proposal as a solution to the village’s financial problems. He anticipated its potential for bringing new jobs to a community threatened by depopulation. Hence, the mayor lobbied for and obtained political support for the quarry on the county level, but the Norwegian Department of Environmental Affairs rejected the proposal in favor of including this particular mountain in a new national glacier park.

In contrast to the developer, who values the mountain as a resource to be exploited for economic gain, local farmers generally consider it to be without value because their sheep cannot graze there, due to the granite’s acidic nature. The geologist appreciates its didactic potential; its exposed glaciated surface reveals the process by which the glacier transformed the mountain some ten thousand years ago. The tourist values easy pedestrian access to the site’s startling beauty. Is it possible to accommodate these four contradictory assessments through a site strategy that combines programmatic options valuable to farmers, developers and researchers, as well as tourists?

1 Statistics Norway (Statistisk Sentralbyrå).
Environmentalists who rage against utilitarian state-driven oil production adopt the same romantic perception of nature associated with the founding fathers of Norway, as can be seen in a pair of paintings from different historic periods. The allegorical painting **Brudefælled i Hardanger** (“Wedding party in Hardanger,” 1848) by collaborators Adolph Tidemand and Hans Frederik Gude depicts the not-yet-independent nation of Norway identified by its spectacular nature. The exploitation of the country’s abundant natural resources is the theme of a more recent painting by Rolf Groven, **Oljemaleri** (1975), depicting a fishing boat sinking into the same body of water, polluted by an oil spill. The title is a pun; **Oljemaleri** means oil-painting. Thus both the anti-mainstream environmental culture of the 1970s and the Norwegian department of Environmental Affairs in the 1990s adopted the same romantic attitude toward nature that characterized the prevalent approach of the new nation in the 1850s.

**Quarrying processes**

Two primary methods of excavating rock — deep-hole quarrying and surface quarrying — have dramatically different effects on the natural environment. Deep-hole quarrying, most common in North America, uses stationary equipment, so the quarry develops within reach of the cranes that raise the stone and can reach depths of over two-hundred feet. In contrast, the loader-operated excavation method, called the Finnish method in quarry terminology, is more horizontal than vertical. The surface quarry covers a broader land area and is worked by smaller mobile equipment. This method is more cost efficient than deep-hole quarrying, but has a greater visual impact on the landscape. Because vehicles conduct this hauling process, the surface quarry is automobile accessible. Although these methods of quarrying use different equipment and have opposite effects on the landscape, they can also be used in combination. For example, the Finnish method might be used to clear a site for a deep-hole quarry, and mobile equipment can be used in combination with stationary cranes, especially at the bottom of a deep-hole quarry.

Both quarrying processes include exploring, de-watering and flood control, hauling and transportation, and both address structural issues in the cutting process that present complex issues for combining a quarry with other programs. The cutting process has traditionally been conducted by drilling holes in the rock and filling these with explosives, but the most recent technology uses heat to cut the granite. Due to the associated reduction in noise levels, this new technology suggests possibilities for combining a quarrying operation with other uses. A combination of the two traditional quarry forms, surface and deep-hole, with this new cutting technology suggests a potential third way of quarrying, with less noise pollution and dust and greater precision.

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Although Norway is a large but sparsely populated country, twenty-six percent of the land, including national parks and forests, is already protected and eighty-four percent of this area is mountainous. Thus it is a conservative, romantic position to include another mountain in a proposed park, rather than develop it for economical gain.
**Slim-deep cut, or simply add a fjord**

A slim, deep cut that combines deep-hole and surface quarrying constitutes a third way of exploiting granite. As opposed to open-pit quarrying, this third way allows the existing landscape to appear continuous, while it opens up an unusual and attractive destination for eco-tourism, benefiting local and scientific interests.

In the 1-kilometer-long and 50-meter-wide cut, multiple facilities are developed along with the working quarry. In addition to quarrying, the intervention accommodates a diverse array of programs: those capable of boosting the local economy, such as fruit and fish farming; those responding to scientific needs, such as a geological research center that focuses on glaciology; those addressing tourism, such as lodging facilities and a visitor's center; those addressing both locals and tourists, such as a climbing wall, hiking trails and areas for sports activities. Two underground tunnels connecting the cut and the fjord are accessible either by boat for tourists or by vehicle for quarrying operations. As an added attraction, water from the melting glacier is channeled through the cut to create the highest waterfall in Europe.

After thirty years of quarrying the tourist destination dominates the site. The natural qualities of the locale contrast the deep cut, which has its own qualities of sublimity. The four agents originally in conflict over the site now use the space in a symbiotic manner. The infrastructure once used primarily for quarrying now provides land and sea access to the mountain. A visitors' center, with rooms for researchers and a café serving tourists, quarry workers and locals, is situated adjacent to the slim-deep cut.
Paths lead through different nature areas around and inside the cut, so that the users can experience the mountain several ways simultaneously. A base camp at the top of the quarry provides tourist cottages and a spectacular view. A climbing facility provides an unprecedented three-hundred-meter vertical face of freshly cut granite. A research center sits within the cut face of the quarry wall, facilitating didactic study of the granite strata. A serpentine road descending to the quarry floor passes such local facilities as fish-tanks, greenhouses and fruit gardens for local and regional markets. After some years of erosion, the cut in landscape takes on a certain familiarity and becomes a part of the existing glaciated fjord landscape.

A long term strategy for coexistence

It is difficult to anticipate the quarrying process. Even with significant surface testing, some decisions depend on sub-surface conditions that cannot be known in advance. Rather than a specific development plan, this proposal is a loose framework that allows diverse perceptions of nature to coexist. It enables the quarry to be developed as an active place for other inhabitants than the quarry-related industry throughout the process of exploiting stone, while securing its after-use as an eco-tourist destination. The intention is not only to predict an outcome once the quarry's resources are exhausted, but also to highlight possible stages during which the site's various functions might coexist over a span of thirty years.

Cutting losses: the first ten years

In the first decade the eco-tourist destination and the quarry would grow interdependently. The first areas to be developed would be those that serve eco-tourists and researchers. This first phase consists primarily of surface quarrying, which is
fast and profitable, with the exception of the research center and climbing wall, which are sited within the deep-hole quarry and change along with the quarrying process.

Quarrying would begin at three separate locations. The first is the fragile greenbelt nearest the shoreline, where a pair of tunnels would provide vehicular access for haulers and loaders and boat access for tourists. The second area to be quarried is at the top of the quarry, where the "base-camp" is situated. The architectural stone extracted here leaves a terraced surface that will provide a foundation for subsequent base camp buildings. The third zone to be developed is the research station, which will progressively move deeper into the quarry as the granite is removed. A road serves quarry industry and tourism, research station and base-camp, making the main pit accessible throughout the quarry’s thirty-year span.

Coexisting programs: the second decade

In the second phase of development, major amounts of granite are extracted from the main pit using the deep-hole method. As the high-intensity quarrying operation gradually shifts closer to the shore, a fish farm and an experimental fruit garden with greenhouses occupy the upper level of the pit. Whereas their isolated location facilitates research on the crops and fish, the fishponds and fruit garden serve the local population by building upon existing industries.

The quarry’s after-use is sequenced to take place in the midst of quarrying. To serve the area’s increased tourism, a new path system around the quarry is linked to existing paths that farmers use to bring their cattle to the mountains in the summer, which date from medieval times. These paths serve as cultural reminders that provide access to breath-taking views of the fjord landscape, just as the new paths offer views of the quarry and its ever-changing activities. This pair of intertwined path systems allows visitors to experience multiple coexisting natures on one mountain.
Gaining ground: the last ten years and beyond

In the third decade surface quarrying diminishes as tourists, locals and researchers prepare to take over the site. The research facility gains another section under the previous one, so that it follows the depth of the pit. The quarry operation gradually phases into the production of architectural stone. This requires more worker competency and results in a lower volume of granite than does gravel production; thus it constitutes a phasing out of the quarrying operation.

These three models demonstrate one possible way for different players — developer, tourist, local population, scientist and politician — to coexist through a sequential and symbiotic process of development. For example, the climbing wall offers freshly cut granite and a safe environment that is renewed annually, especially attractive for climbers because it presents new challenges and opportunities for competition. This strategy of coexistence through sequential development through a thirty-year span of development allows the quarry to not only provide economic gain for the developer, but also address complex issues that include all players.

Cutting losses, gaining ground

It might seem implausible to solve this classic conflict of nature management by manipulating existing quarrying methods and overlaying programmatic requirements of the diverse interest groups involved. The users represent divergent perceptions of nature and resource management. Finding the middle ground among these interests was never the goal of this project. Instead, the diversity of opinions and programs was taken as an opportunity to develop a nonconformist or “groundbreaking” solution to the conflict. A cross-fertilized space in which eco-tourists, quarry-workers, local dwellers and researchers coexist, the slim-cut quarry serves several strata of occupants as multifaceted as the granite itself. In cutting their economical losses by initiating new industry, the local population might no longer be threatened by depopulation. As a result of the workers brought in to serve the new industry, as well as tourists and researchers attracted by the associated programs, the community will gain new ground.
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