
LANDSCAPE JOURNAL

Special Issue: Nature, Form, and Meaning

Design, planning and management of the land

Volume 7, Number 2, Fall 1988



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Design, planning and management of the land

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SPECIAL ISSUE: NATURE, FORM, AND MEANING

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Landscape Journal is dedicated to the dissemination of the results of academic research and scholarly investigation of interest to practitioners, academicians, and students of landscape architecture.

Cover: Skyspace I (day), 1972, by James Turrell. Interior light and open sky. See Anne Whiston Spirn, "The Poetics of City and Nature: Towards a New Aesthetic for Urban Design," page 108. Photograph by James Turrell.

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Fall 1988

Nature, Form, and Meaning: Guest Editor's Introduction

We are surrounded with things which we have not made and which have a life and structure different from our own: trees, flowers, grasses, rivers, hills, clouds. For centuries they have inspired us with curiosity and awe. They have been objects of delight. We have recreated them in our imaginations to reflect our moods. And we have come to think of them as contributing to an idea which we have called nature . . . (Clark 1963, p. 1).

Whether “the sense of relation between nature and man in some form has always been the actuating spirit of art,” as John Dewey (1958, p. 339) asserted in *Art as Experience*, it is certainly at the heart of the art of landscape design. Landscape design expresses our conception of nature and the place of humans within nature. This issue of nature is fundamental to landscape design theory.

The artful shaping of the landscape to serve human purposes at whatever scale, from the garden to the region, entails an understanding of the human and the natural worlds, in both an empirical and a metaphysical sense. Landscape architects must confront nature as discrete elements of rocks and trees and nature as Idea (nature/Nature). In designing the landscape we extract natural features from their context and reorder them to serve human purposes. At times we attempt to imitate or reproduce natural processes and forms, at times we abstract or echo those processes and forms, and at times we superimpose a sharply contrasting order. This we do to express meaning.

The concern for nature that is at the core of landscape architecture yields a sense for temporal and spatial scales that distinguishes it from related fields. The landscape comprises a spectrum of scales; it is rarely as enclosed and self-contained as a building, but is continuous, linked to other distant landscapes by the movement of air,

earth, water, and living organisms, including humans. The landscape is also dynamic, evolving continually in time. Unless a landscape design is comprised of inert materials, it is thus never complete, but continues to change perceptibly month by month, year by year.

This special issue of *Landscape Journal* focuses on the theme “Nature, Form, and Meaning.” It consists of nine articles whose authors represent a range of disciplines, including landscape architecture, architecture, geology, geography, and anthropology. Each author approached the topic from a different perspective; some focused on landscapes formed primarily by natural processes with little evidence of human intervention, others on the vernacular landscape, while others concentrated on landscapes designed by professionals. Several themes emerge from this diversity that pose a challenge to contemporary landscape design. Where do landscape forms come from, both those of the natural, as well as the cultural landscape? How can those forms be employed in the designed landscape? What sorts of meanings do these forms embody and how do these meanings come to stand for the views and values of a group or a society as a whole? Why do we value what we value from the past? And finally, how can this understanding be applied to designing landscapes and to judging their quality? The issue of authenticity also

looms large. Can the appearance of the landscape be different from its reality? In landscape design one must choose whether to abstract from nature or to imitate the appearance of nature. Is one approach more valid than the other? One also senses a new aesthetic emerging from many of these papers, an aesthetic that involves movement as well as rest, sound and other sensual qualities as well as vision, that recognizes the evolutionary character of the landscape, and that provides a new appreciation of works of the past.

This issue of the *Journal* raises as many questions as it answers, and that was the intention. It is hoped that the issue might engender debate which will continue in forthcoming issues. In one case, Denis Wood's critique of visual resource management, the debate started prior to publication, and a number of authors were invited to respond. Two responses are included here. Reactions to this and other articles are welcomed in forthcoming issues of the *Journal*.

The idea for this special edition grew out of a panel at the CELA conference at the University of Illinois in 1985, presented by Arnold Alanen, Kenneth Helphand, Robert Riley, and Ervin Zube. A lively discussion between panelists and audience ensued, spilled out over the remainder of the conference to include others, and culminated in the decision to sponsor this special issue. This would not have been possible without a grant from the National Endowment for the Arts, and I would like to thank Catherine Brown, Robert Riley, Darrel Morrison, and Arnold Alanen for their advice on the proposal to NEA. Members of the guest editorial board provided important ideas, counsel, and support throughout the preparation of the issue, and helped greatly with the difficult task of reviewing papers. I also would like to thank all of those who submitted articles, some of which will

appear in subsequent issues of the *Journal*. In accordance with the policy of *Landscape Journal* all submitted articles received blind review by at least two referees. I would like to thank Arnold Alanen, not only for organizing the blind review of my own article, but also for sustained support, advice, for managing the production and for serving as liaison with the University of Wisconsin Press. Having seen from the inside the enormous amount of work entailed in a single issue, much of it unnoticed and invisible to readers and even to authors, I believe that the field owes a great debt to Arnold Alanen and Darrel Morrison for their energy, selfless devotion, and good judgment in launching *Landscape Journal* and in serving as editors for its first seven years.

Anne Whiston Spira
Guest Editor

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The Poetics of City and Nature: Towards a New Aesthetic for Urban Design

Anne Whiston Spirn

Anne Whiston Spirn is Professor and Chairperson of the Department of Landscape Architecture and Regional Planning at the University of Pennsylvania. Her book, *The Granite Garden: Urban Nature and Human Design* (Basic Books, 1984) received the President's Award of Excellence from the American Society of Landscape Architects. This essay is the subject of a new book that further explores the theoretical and aesthetic issues raised in *The Granite Garden*. She received her A.B. from Radcliffe College and an M.L.A. from the University of Pennsylvania.

Abstract: *This essay describes a new aesthetic of landscape and urban design, an aesthetic that encompasses both nature and culture, that embodies function, sensory perception, and symbolic meaning, and that embraces both the making of things and places and the sensing, using, and contemplating of them. This theory is based upon an understanding of nature and culture as comprising interwoven processes that exhibit a complex, underlying order that holds across vast scales of space and time. This basis in process yields a view of urban form as dynamic, as evolving over time, in predictable and unpredictable ways.*

The idea of dialogue, with its embodiment of time, purpose, communication, and response, is central to this theory. The form of the city is seen as the result of complex, overlapping, and interweaving narratives that, together, comprise the context of place and the storylines that connect the place and all those who dwell within it. The issues of time and change, process and pattern, order and randomness, being and doing, and form and meaning are inherent to this theory. These issues are also central to recent theoretical currents in other fields, including art, music, and science. Although this aesthetic prompts a new appreciation for forms of the past, it also demands new forms, new modes of notation and representation, and new processes of design, construction, and cultivation.

The city has been likened to a poem, a sculpture, a machine. But the city is more than a text, and more than an artistic or technological artifact. It is a place where natural forces pulse and millions of people live—thinking, feeling, dreaming, doing. An aesthetic of urban design must therefore be rooted in the normal processes of nature and of living. It should link function, feeling, and meaning and should engage the senses and the mind.¹

The city is both natural and contrived, a transformation of “wild” nature to serve human needs, an evolving entity shaped by both natural and cultural processes. Urban form is dynamic, ever-unfolding through dialogues of statement and response. These dialogues are articulated by individuals and by groups, who, in transforming the city and nature, are themselves transformed. The form of the city thus records many narratives, all embodying stories: stories about the nature of human society (about the relation of the individual to the State or the Church, for example, or the power of commerce); about the quality of deities; and about the nature of

Nature. These stories are all bound up in one another, their themes interwoven, their plots never complete.²

In those dialogues that engage both culture and nature lies the basis for a new theory of urban design. This theory, which builds on a rich history of antecedents, as well as recent work in philosophy, art, and science, embodies an aesthetic that recognizes both natural and cultural processes and reveals the rhythms and the patterns created by their discourse.³

This theory applies not only to the city, but to rural regions as well. Many examples described here are drawn from non-urban settings, and one could substitute the words “place” for “city” and “settlement form” for “urban form.” Still, it is in the city that the challenge is both greatest and least recognized, because the human-built structure seems so dominant, because the contrast between nature’s order and human order is particularly acute, and because cultural processes are so densely interwoven and overlain.

This theory is concerned equally with everyday things and with art, with small things like fountains, gardens, and buildings and with large systems

like those that transport people or carry wastes. It connects those who live in the city with those who design these objects, places, and systems. It is a theory that will yield new urban forms, forms that are as revolutionary as those revealed by contemporary science, and that will require new modes of notation and representation and new processes of design, construction, and cultivation.

Dimensions of the New Aesthetic

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 both the flow of passing time and the singularity of the moment in 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.

The idea of dialogue, with its embodiment of time, purpose, communication, and response, is central to

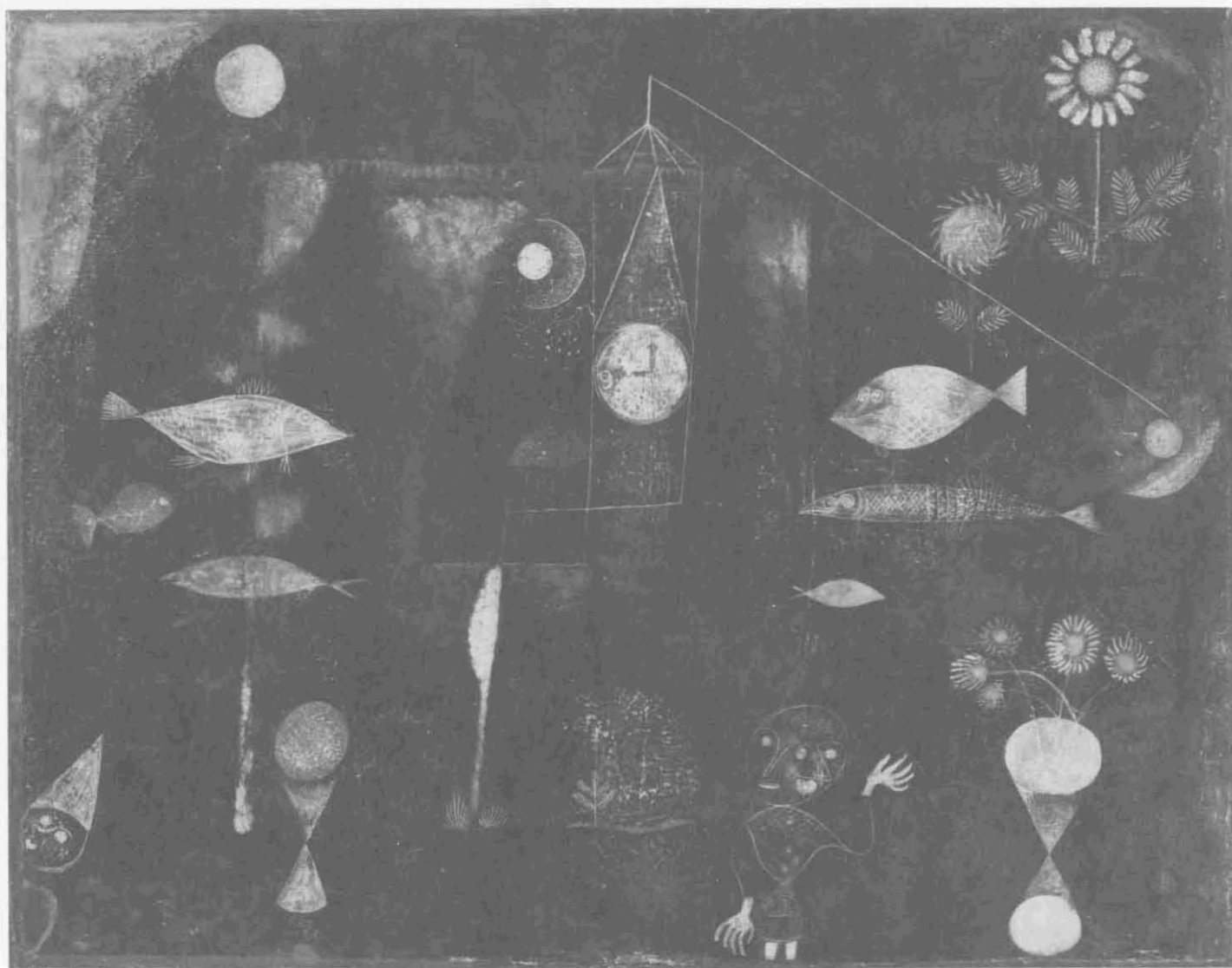


Figure 1. *Fish Magic*, by Paul Klee, 1925. Courtesy of the Philadelphia Museum of Art, The Louise and Walter Arenberg Collection.

this aesthetic. One form of dialogue, essentially introspective, entails the contemplation of such questions as Who Are We? Where Are We? What Do We Value? Another type of dialogue entails the transformation of the external world for human purposes, including construction of shelter, acquisition of food and water, defense, trade, worship, and play. Through these transformations we express what we, as individuals and as societies, value. Both types of dialogues—the internal and the external—are means of knowing oneself and one's place in the world. Throughout history, individuals and societies have engaged in such dialogues and have recorded them

in poetry, painting, scientific experiments, and the forms of human settlement. Whether their origins are metaphysical or mundane, these dialogues are ultimately aesthetic.⁴

Many different and even contrasting epistemologies have emphasized an ultimate unity and have stressed that that ultimate unity is *aesthetic* (Bateson 1980). John Dewey (1958) characterized the sense of an extensive and underlying whole as the essence of aesthetic experience and even of sanity. Design which highlights nature's processes for our contemplation permits the experience of a sense of unity with a larger whole which is the universe in which we live.

A sense of identity—as both an individual and a member of a group—is an important counterpoint to a sense of unity; both are essential to psychological growth and health (Erikson 1963). Erik Erikson described the significance of identity and its development in the individual (Erikson 1968). Relph (1983) and Norberg-Schulz (1979) both stressed the importance of identity as it is expressed in a sense of place. Design which juxtaposes and contrasts nature's order and human order prompts the contemplation of what it means to be human. Design that fosters and intensifies the experience of temporal and spatial scales facilitates both this reflection upon per-

sonal change and the search for identity and sense of unity with a larger whole. Design that resonates with the natural and cultural rhythms of a place, that echoes, amplifies, clarifies, or extends them, contributes to a sense of rootedness in space and time.

The understanding gained through this sense of unity, sense of identity, and sense of place are revealed in the manner in which we dwell. We are what we build and, in that building, we come to know who we are. Design facilitates a sense of dwelling when it permits individuals to shape their own environment and when it expresses the values and attitudes a culture holds toward the natural world and human society.

Time, Change, and Rhythm

"For the artist," observed Paul Klee, dialogue with nature remains a *conditio sine qua non*. The artist is a man, himself nature and part of nature in natural space" (Klee 1923, p. 63). The dialogue between the human organism and the natural environment takes place on both an unconscious and a conscious level. Before humans built towns and cities, our habitat was ordered primarily by nature's processes. "Early man was imprinted by the soils, rocks, springs, and rivers among which he developed. His mind and bodily responses were shaped by the information he derived from his senses" (Dubos, 1971, p. 9). The most intimate rhythms of the human body are still conditioned by the natural world outside ourselves: the daily path of the sun, alternating light with dark; the monthly phases of the moon that tug the tides; and the annual passage of the seasons. Isolated in a windowless room with constant, artificial illumination, the human mind becomes disoriented and the body drifts into eccentric rhythms. These rhythms of sleeping and waking, of the ebb and flow of energy, are dialogues our bodies enter into without our conscious intervention.

The perception of change is essential to developing a sense of who we are, where we have come from, and where we are going, as individuals, as societies, as a species. The perception of time depends upon regularly recurring events, without which, time would be an imperceptible, formless flow. The

experience of repetitive and comprehensible change, as expressed by temporal cycles like the seasons, gains an even more powerful aesthetic potential in an age such as ours characterized by rapid change. Design that makes visible the operation of natural processes and their temporal cycles contributes to the experience of being connected to rather than separate from the past and the future. Movement and change are central, indeed, essential to life. When these qualities are found in the designed environment or works of art, they attract the onlooker, affirm one's everchanging existence, one's life, and transform one from observer into participant.

In contrast to the repetitive predictability of daily and seasonal change is the immensity of the geological time scale. Over the past three centuries our notion of time and space has changed enormously. In the seventeenth century, the age of the earth was reckoned in thousands of years. From this view of the world that measured the age of the earth in human generations, we have come to calculate the earth's age in terms of thousands of millions of years and have developed theories of the universe that dwarf the age of the earth itself. The human life span now seems but a blip, and the earth but a small speck in the universe.⁵

T. S. Eliot (1962) in "The Dry Salvages," addressed both a sense of unity with nature ("The river is within us, the sea is all about us"), as well as the poignant contrast between nature's time and human time ("The tolling bell/Measures time not our time, rung by the unhurried/Ground swell").⁶ This is a theme also explored by Paul Klee in many drawings and paintings, including "Fish Magic" (1925) in which he depicted humans as poised between two realms—the realm of nature and the realm of culture.

Many contemporary artists have moved the focus of their work away from the gallery and the museum into the larger environment to better explore this theme, and their work has profound implications for the design of cities. The Japanese sculptor Susumu Shingu, for example, creates an explicit dialogue between human-made objects and the natural forces of wind, water, and light. Shingu's intention is to make visible the dialogue between

two rhythms—"the rhythm of changing nature and the rhythm of beings living in nature." He describes these rhythms as being "delicately intertwined, making various points of contact" and seeks to highlight these points of contact through which he confronts the fragility of human artifacts with nature's power. This he does in a gentle way; his purpose is to inspire humility and nourish human growth, to reject the "static and solid" in favor of "placing ourselves amidst perpetually flowing rhythm" (Shingu, 1983, p. 6).

Such points of contact are eloquently delineated in Walter DeMaria's "Lightning Field" (1974–1977), a seemingly endless grid of stainless-steel poles set in a desert basin. The poles are of uniform height and regular spacing, forming a grid that measures one mile on one side and one kilometer on the other. The grid sets lightly on the land; almost invisible at midday, it is revealed by the low light of morning and evening, and during lightning storms when the poles form flash points providing an awesome display.

In "Time Landscape," artist Alan Sonfist has attempted to replicate the precolonial landscape of New York City on a small, fenced-in plot in Manhattan. The "artwork" is composed of trees and shrubs intended to evolve through natural processes of plant succession into a native forest. Urban "volunteers"—*Acer platanoides*, *Ailanthus altissima*—have seeded themselves since the original planting and have thrived. The eventual forest will be cosmopolitan; like the city itself, it will consist of both "natives" and "exotics." Conceptually, "Time Landscape" is exciting; in execution, however, it is not wholly successful. "Time Landscape" is "invisible" to many passersby. Its appearance, at casual glance, is indistinguishable from vacant lots nearby. Only a small plaque which describes the project gives a clue that the landscape was intentionally planted.⁷

Another artist, James Turrell, works with light and sky to design apertures in ceilings and walls which he calls "sky spaces." Turrell frames a view of the sky, frequently combining natural and artificial light. By isolating the sky and stripping away competing

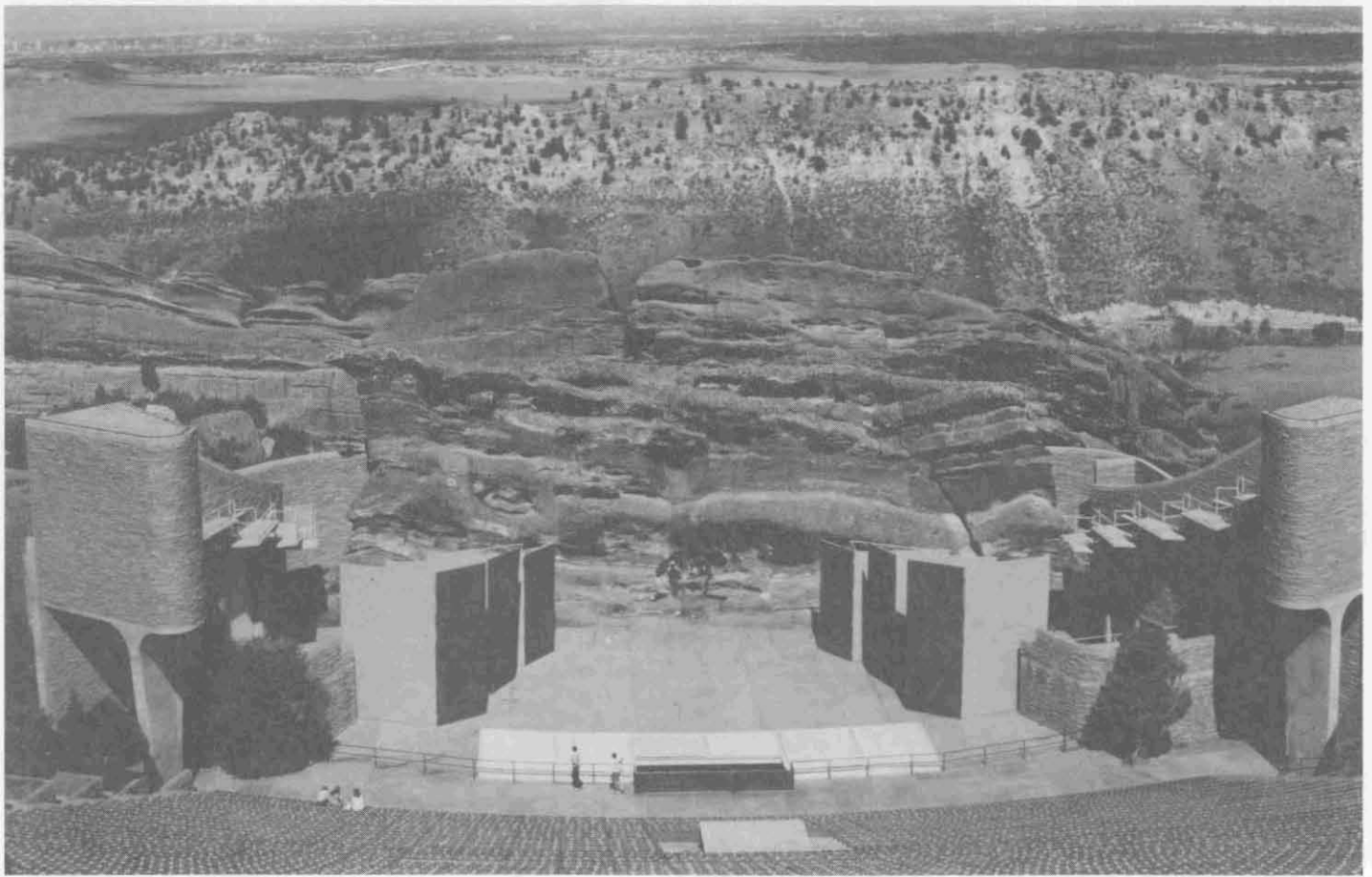


Figure 2. Set in the foothills of the Rocky Mountains, Red Rocks Amphitheater affords a view out across the Great Plains and the city of Denver. Photograph by Anne Spirn, 1977.

visual stimuli, he offers an aesthetic experience of the sky alone. His intent is "to set up a situation to which I take you and let you see. It becomes your experience . . . It's not taking from nature as much as placing you in contact with it" (Brown 1985, p. 22). Turrell's sky spaces recapitulate, in the city, the experience of lying in an open meadow where the sky fills the view. One is absorbed in changes in the sky field; clouds scudding past, lending depth, color shifting gradually; especially at dusk when blue becomes darker and deeper, extending into violet, then pierced by the first star, all in a slow, but steady, succession toward the ultimately enveloping black of night. Through a small window framing a view of the sky, the observer is led to a contemplation of the physical laws that govern the universe, that connect our body, our world, to other worlds.⁸ In the modern city, where buildings

crowd the horizon, such an experience of the sky is rare except on rooftops or in park meadows. Yet skylights, lightning rods, weather vanes, and vacant lots are all commonplace. Turrell, DeMaria, Shingu, and Sonfist have transformed them into art, into vehicles for contemplating time, change, and the rhythmic dialogue between humans and nature.

Process, Pattern, and Form

Great, upright, red rocks, thrust from the earth, rising hundreds of feet, strike the boundary between mountain and plain along the Front Range of the Rockies. Red Rocks Amphitheater is set up in these foothills, its flat stage dwarfed by the red slabs that frame it and the panoramic view out across the city of Denver and the Great Plains. The straight lines of the terraced seats, cut from sandstone to fit the human body, and the tight curve of the road

cut to fit the turning car, seem fragile next to the rocks' awesome scale and magnificent geometry.

Denver is a city of the high plains. Nestled up against these foothills, it rests on sediments many hundreds of feet deep, their fine grains eroded from the slopes of ancient mountains that once rested atop the Rockies, their peaks high above the existing mountains. The red slabs are the ruined roots of those ancient mountain peaks, remnants of rock layers that once arched high over the Rockies we know today. As the eye follows the angle of their thrust and completes that arc, one is transported millions of years into the past. This is the context of Denver, a context in space and time created by the enduring rhythm of nature's processes and recorded in patterns in the land. The amphitheater affords not only a view of the city, but also a prospect for reflecting upon



Figure 3. These red slabs at Red Rocks Amphitheater are the remnants of rock layers that once arched high over the Rockies. Photograph by Anne Spirn, 1977.

time, change, and the place of the human and city in nature.

When we neglect natural processes in city design, we not only risk the intensification of natural hazards and the degradation of natural resources, we also forfeit a sense of connection to a larger whole beyond ourselves. In contrast, such places as Red Rocks Amphitheater and Turrell's skyspaces provoke a vivid experience of natural processes that permit us to extend our imagination beyond the limits of human memory into the reaches of geological and astronomical time and to traverse space from the microscopic to the cosmic. Geologist David Leveson (1971, p. 24) has observed that "if rock is primarily our foothold on life, it is also a reminder, a link—if we let it be—of our relationship to and the reality of the rest of the universe. No less than the stars, the rocks so casually around us are the stuff of the world: their siblings circle the sun, their godparents populate all space." However permanent rock may seem, it is ultimately worn smooth by water, reduced finally to dust. The power of a raindrop, multiplied by the trillions over thousands and millions of years has eroded mountains into plains. The pattern of lines etched by

water in the sand of a gutter or a beach echo the pattern engraved on the earth by rivers over time.

These are the patterns that connect.⁹ They connect us to scales of space and time beyond our grasp; they connect our bodies and minds to the pulse of the natural world outside our skin. The branching riverbed cut by water flowing, the branching tree within which the sap rises, these patterns mirror the branching arteries and veins through which our blood courses.

Patterns formed by nature's processes and their symmetry across scales have long been appreciated by close observers of the natural world. Recent developments in mathematics and science afford new insights into the geometry and aesthetics of form generated by dynamic processes, be they natural or cultural, and point to new directions for design.

The forms of mountain ranges, riverbanks, sand dunes, clouds, trees, and snow crystals are poised, jelled, at a moment in time, the physical embodiment of dynamic processes. Their beauty consists of a peculiar combination of order and disorder, harmoniously arranged, and the fact that their form is at equilibrium, at any given

moment, with the processes that produced it. Such forms and the phenomenon of their symmetry across scales of time and space, have recently been described by a new geometry, "fractal" geometry, which one of its originators, Benoit Mandelbrot (1983, p. 5), calls "the geometry of nature"—"pimpily," "pocky," "tortuous," and "intertwined." A sensibility steeped in classical geometry perceives these forms as too complex to describe, and even as being disordered. However, as fractals, such patterns can be described with simplicity, the result of simple, repetitive processes such as bifurcation and development. The variety of forms that stem from the same process is the result of response to differing conditions of context, or to the interaction with other processes.

Snow crystals, in their balance of stability and instability, of symmetry and randomness, of repetition and variety, are an example of fractal form. As water crystalizes, it forms a growing tip with a boundary that becomes unstable and sends off side branches. This process accounts for the similarity among snowflakes, while their seemingly infinite variety is caused by variations in their context—in the pre-

cise combinations of wind, sun, humidity, and temperature to which each flake is exposed during its formation. Computer simulations of these thermodynamic processes produce patterns that mimic real snowflakes (Gleick 1987). The form of each snowflake or ice crystal thus embodies both the process of its formation and all the changing weather patterns it has experienced. These patterns hold at the microscale and at larger scales: at the scale of an ice crystal and at the scale of an ice floe.

Strange and wonderful forms, mirroring those of nature, have been created by repeating a simple computer program many times over. Early in the process, the resulting form, as seen on the computer screen, appears random; gradually an order unfolds. Such experiments are the subject of a new field, coined Chaos by its pioneers, who feel that they are defining a new paradigm.¹⁰ Their subjects are diverse, their objective to identify the underlying order in seemingly random fluctuations in, for example, weather,

the static in telephone transmissions, the populations of predators and prey, heartbeats, and the stock market. Many of those working in this field have expressed their aesthetic attraction to the mathematics of fractal geometry in contrast to what they term the "Euclidean sensibility" (Gleick 1987).

This is a geometry foreign to that of Euclid with its lines and planes, circles and spheres, triangles, and cones. Euclidean geometry is an abstraction of reality; its beauty lies in smooth, clean, ideal shapes. It is a geometry based in the belief that rest, not motion, is the natural state; it is a geometry that describes three-dimensional space, but that neglects time.¹¹ That does not mean we should avoid using Euclidean geometry in the design of landscapes. Indeed such use may heighten our perception of the natural forms of rivers and trees and the processes that produce them, especially when it is employed as a visual counterpoint that both expresses and contrasts with those forms.

In Dinan, France, a monumental arc of poplars takes its inspiration from the sweeping meander of the River Rance, smoothing out the irregularities of the river bank. The arc represents the *idea* of that sweep. Through the abstraction and echo of the horizontal form in the vertical dimension, in what is clearly a line inscribed by humans on the landscape, the experience of the river's meander is intensified. Though set in a tight, evenly-spaced row along the banks of the river, the individual trees assert their own quirky growth, which is seen more clearly in contrast to the regularity of their placement. The core of Dinan is a fortified medieval town set on a hill. The park is a river valley that forms a green chasm between the old city and its modern suburbs. The riverway is a precinct apart from the old and the new city through which the river flows; its form is more sinuous, its tempo more leisurely. It is a landscape on the move: water flowing, swinging, cutting into the rock along the outer arc, and laying down a broad terrace



Figure 4. Poplar Arc and Allotment Gardens. This monumental arc of poplars in Dinan, France, takes its form from the sweeping meander of the River Rance. The crazy quilt pattern of allotments in the lower right results from the efforts of many individuals who garden there. The view is from the ramparts of the old city looking to the suburbs beyond the park. Photograph by Anne Spirn, 1978.

along the inner curve. The flat plain whose edge is marked by the poplar arc is advancing, built from sediments carved from hillsides upriver. The rough green wall of woods rising beyond the poplar arc cloaks the steep slopes, cut by water flowing.

The interplay of different processes is also a subject of current research on "chaos." Computer drawings illustrate the patterns that result when several rhythms, such as radio frequencies or planetary orbits, come together (Gleick 1987). Perhaps this is the contemporary version of the "music of the spheres."¹² Such patterns appear complex, yet one senses that there are underlying, ordering principles. They resemble a topographic contour map, prompting the realization that land form results from a similar interplay among multiple forces and processes, including gravity, water flow, and weather. Cultural processes also

engage natural processes on the land; the rhythms of food production and transportation, for example, interact with the flow of wind and water to mold a landscape. Like natural processes, certain cultural processes—the acquisition of food, disposal of wastes, movement of people and goods, trade, child-rearing, and play—are universal. The patterns that result from those processes vary in response to the specific context of natural environment and culture and to the idiosyncracies of individuals.

It is nature *and* culture together, as interacting processes, that render a place particular. Natural processes, operating over time, give rise to the initial form of the land and comprise the base rhythm to which cultural processes respond, introducing new and changing themes, and weaving an intricate pattern, punctuated here and there by high points of nature and art.

Every urban landscape is a symphony of complex harmonies, which, although they can be savoured at any given moment, evolve continually in time, in both predictable and unpredictable ways, in response to natural processes and changing human purposes. It is a symphony in which all the dwellers of the city are composers and players.

Making, Caring, Thinking, Dwelling

The process of dwelling, an irreducible fact of every culture, is an aesthetic act, entailing *being* and *doing*, a correspondence between nature and culture. Through cultivation and construction, individuals and societies forge a place within nature that reflects their own identity—their needs, values, and dreams. It is the making of and caring for a place, as well as the contemplation of these labors and their meanings, which comprise the aesthetic experience of dwelling.



Figure 5. Poplars. Dinan, France. Though set in a tight, evenly-spaced row along the banks of the River Rance, the individual trees assert their own quirky growth. In the distance is the rampart from which Figure 4 was taken. Photograph by Anne Spirn, 1978.

This concept, as explored by the philosopher Martin Heidegger (1971), has important implications for designers and planners of human settlements.¹³ In his search to define the nature of dwelling, Heidegger traced the roots of the verb “to dwell” in both high German and Old English. In both languages the root word for dwell, *buan*, also means “to build.” In German, moreover, the root word for building and dwelling is also the same as that for *ich bin* or “I am.” I am because I dwell; I dwell because I build. “We attain to dwelling, so it seems, only by means of building” (Heidegger 1971, p. 145).

To deny people the opportunity to build, to manipulate their environment, is to deny them the ability to dwell. Furthermore, the word *bauen*, which embodies building, dwelling, and being, not only means to build as in to construct, but “also means at the same time to cherish and protect, to preserve and care for, specifically to till the soil, to cultivate the mind” (Heidegger 1971, p. 147). To dwell in a place, therefore, to make it one’s own, one must not only construct, but also cultivate. In this dual sense, house and garden together comprise a dwelling. Of these it is the garden that affords the primary opportunity for dialogue with the natural world.¹⁴

The garden is a potent and complex symbol; it embodies pleasure, fertility, sustenance, and renewal. Gardening is a life-embracing act, an act of faith and hope, an expression of commitment to the future; it can even be a political act. From ancient cities to the cities of medieval Europe, agricultural pursuits formed a part of daily urban life; orchards and gardens lay within the city walls.¹⁵

How do we account for the strength of this tradition of urban gardens? Is it entirely utilitarian—the need to produce food, a precaution against siege? Heidegger’s essay on the quality of dwelling sheds light on the persistence and popularity of urban gardens, as well as their significance.¹⁶ People who can afford gardens in the city do so, even on tiny balconies. Many city residents who rent the apartments or houses in which they live, however, are not permitted to alter them; many also do not have access to a private garden. In Heidegger’s sense of the word, these residents are prevented

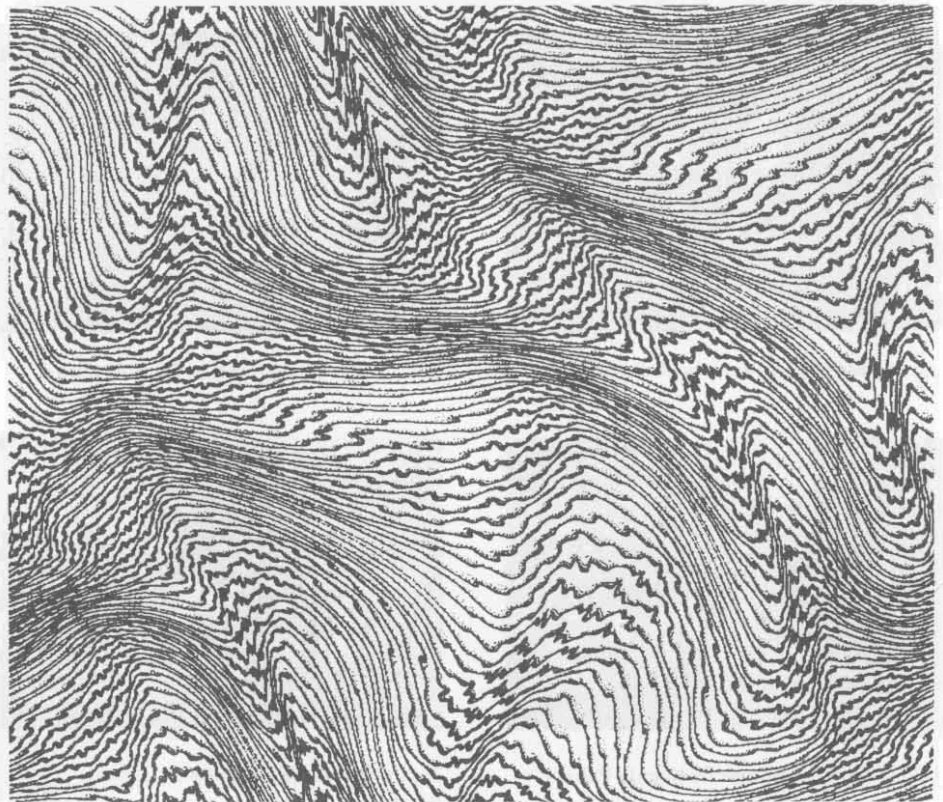
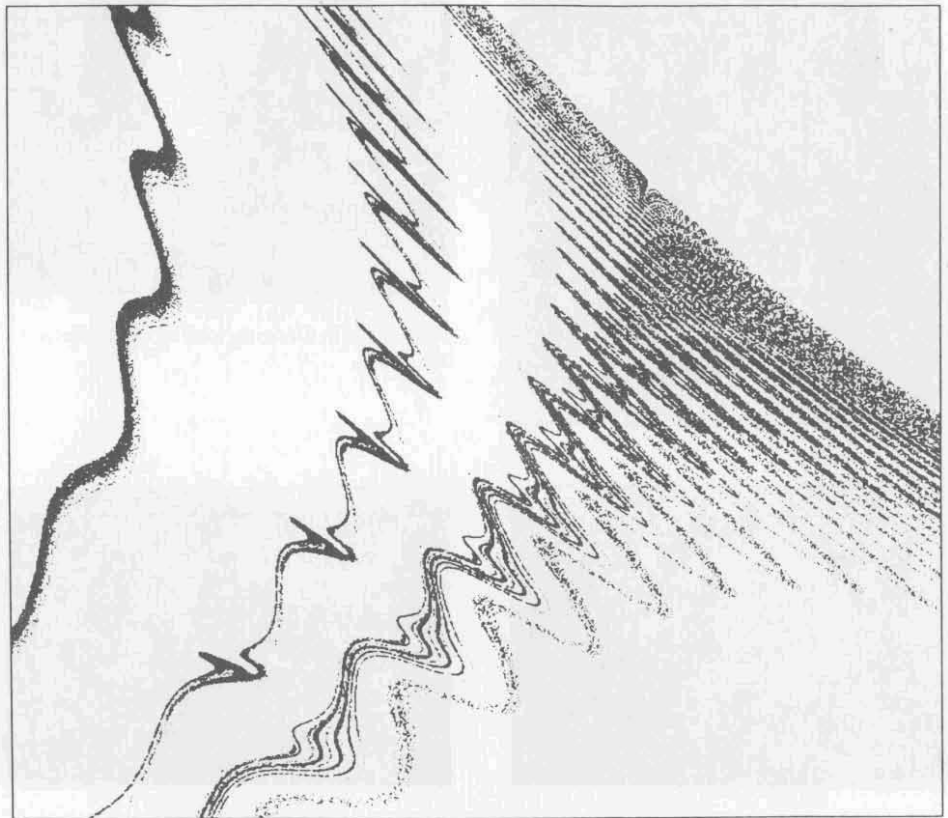
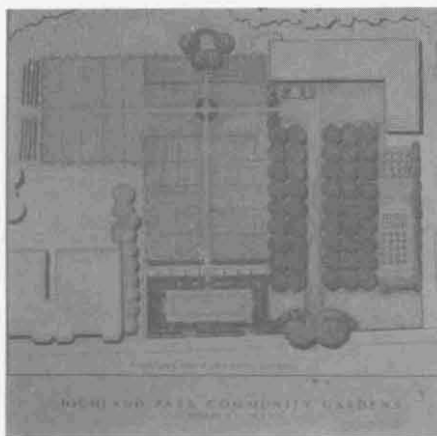


Figure 6. Computer drawings illustrate the patterns that result when several rhythms, such as radio frequencies or planetary orbits, interact. Photographs courtesy of James Yorke, Director, Institute for Physical Science and Technology, University of Maryland.



March 1984. Drawing and model by Beth Arndtsen.



February 1984. Photograph by Randy Palmer.



July 1988. Photograph by Karen Reutlinger.



April 1984. Photograph by Beth Arndtsen.



April 1984. Photograph by Beth Arndtsen.



July 1984. Photograph by Randy Palmer.



August 1984. Photograph by George Batchelor.

Figure 7. Cooper's Place, a community garden in Boston built and maintained by the gardeners for their neighbors' use.

from dwelling in the houses they occupy, from making them homes rather than houses. Nor do most public parks provide an opportunity to shape one's environment. People are discouraged from altering parks or even from decorating them. To alter is to vandalize.

The urban allotment garden movement has evolved to address this need. In Europe this tradition has its roots in the medieval city, and urban gardens take many forms. In Germany, for example, many apartment courtyards are divided into individual garden plots; each apartment in the adjacent building has a corresponding garden (*mietergarten*). The plots are the size of a small room, their boundaries marked by a fence. The gardens are diverse; some people put up trellises, others have picnic tables, some people grow corn, and others cultivate roses. The result is a delightful, ordered riot of form, color, texture, and use. It is much more engaging and more aesthetically pleasing than the landscape of most apartment buildings, particularly public housing.

Sam Bass Warner (1987) has documented the history of communal allotment gardens in American cities over the past century. Design and planning professionals usually ignore community gardens as an urban land use; if they consider such gardens at all, it is as an ephemeral land use. The presence of community gardens on any specific site within the city may be temporary, but they have had a remarkably sustained history in urban life and have persisted as a viable and popular urban land use.¹⁷

Recently, the community garden movement has been strongest in inner-city neighborhoods where the well-tended gardens stand in stark contrast to vacant lots and poorly-maintained public parks nearby. "Cooper's Place," a community garden in Boston, combines individual garden plots with a separate flower garden open to the public and maintained by the gardeners for their neighbors' use. These gardens were constructed in 1984 on several vacant lots. They were conceived by nearby residents who, with the help of Boston Urban Gardeners, organized the necessary resources and mobilized graduate students in landscape architecture to work on the design.¹⁸

In this and other neighborhoods, the effort—both individual and group—entailed in marshalling resources, securing land, renovating soil, and building and cultivating gardens has had far-reaching ramifications for education, employment, and further community projects. Community gardens are a model of how to care for a place. Without the opportunity to dwell in such a way, it is hard to care for the greater environment of the city as a whole, which is an essential perspective if we are to make the city a better place for all of us.

A major issue for designers is how to relinquish control (whether to enable others to express themselves or to permit nature's processes to take their course) while still maintaining an aesthetically pleasing order. Two paintings by Paul Klee, "Tree Nursery" and "Rhythm of Planting" demonstrate an answer. In both, the artist established a framework (horizontal lines in "Tree Nursery" and a grid in "Rhythm of Planting") within which much variety was accommodated without the overall effect seeming chaotic. The pleasing quality of the "mietergärten" in Munich, depends upon a similar framework of divided plots. Each part or garden is a whole in itself, an improvisation on similar themes by different individuals. Yet all are part of a whole unified by materials, structure, and the process of cultivation.

In Granada, Spain, allotment gardens lie within the Alhambra and Generalife, a national landmark. The gardens rest within a highly organized framework of walls and terraces, and enliven the scene rather than detract from it. They complement the formal gardens and courtyards, where vegetables and nut and fruit trees are planted among flowers and vines. There is no arbitrary separation in this Moorish garden between the ornamental and the productive, between the pleasurable and the pragmatic, between the sacred and the secular.

Just as gardens express the makers' views of their relation to the natural world, so does the form of the cities a society creates express that society's values. As such, urban form represents a dialogue between human purpose and nature's processes over time. In the history of a city, the natural setting is a constant that successive hu-

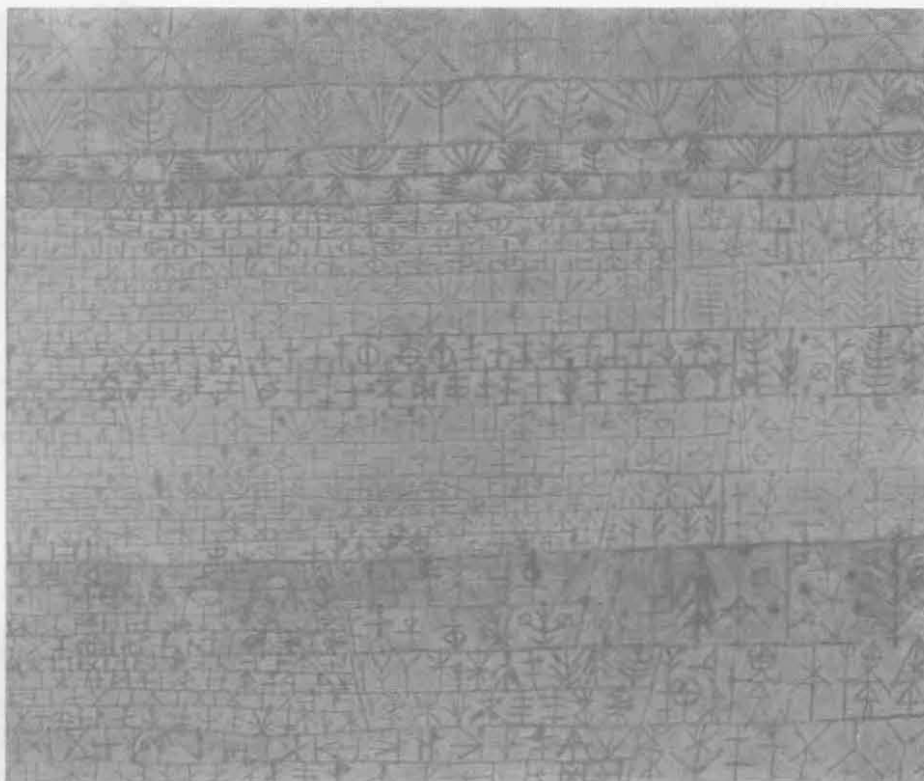


Figure 8. Tree Nursery, by Paul Klee. Courtesy of the Phillips Collection, Washington, DC.



Figure 9. Terraced allotment gardens at the Generalife. Granada, Spain. Photograph by Anne Spirn, 1984.



Figure 10. Aerial View of the Fens, ca. 1925. Courtesy of the National Park Service, Frederick Law Olmsted Historic Site.



Figure 11. Aerial view of the Fens and the surrounding city. Photograph by Alex S. MacLean/Landslides, 1983.

man generations must address again and again, each in accordance with its own values and technology. Civilizations rise and fall, traditions, values, and policies change, but the natural environment of each city remains an enduring framework within which the human community builds. A city's natural environment and its urban form,

taken together, tell a story of the interaction between natural processes and human purpose over time. Together they contribute to each city's unique identity and together they express the failures and achievements of the past, the aspirations of the present, and the opportunities for the future (Spirn 1984). Urban form that exploits and

celebrates the opportunities afforded by the natural environment and that acknowledges the constraints it poses connects time past and time future with time present.

Just as an individual gains self-knowledge from an ability to perceive his or her own life in relation to the past, so does a city gain identity when the shared values of its residents are clearly embodied in urban form. Boston is fortunate in that regard; many of that city's most admired urban features embody the cultivation of nature by past generations in order to sustain human health, safety, and welfare. The Fens and Riverway and the residential and institutional districts that surround them, for example, tell a story about Boston: about a vital, growing city's need for expansion and public transportation; about the need to protect citizens from floods and water-borne disease; about a new role for nature in the city.

As originally conceived and constructed, the Fens and Riverway were innovative models for public open space serving a variety of human needs and for the integration of engineering, economics, and aesthetics. The Fens and the Riverway created an integrated system of park, parkway, storm drain, and streetcar line that formed the skeleton for the growth of new suburban (now inner city) neighborhoods.

Frederick Law Olmsted and his partners designed the Fens as a salt water marsh that would function as a flood control reservoir and that would be a counterpoint to the surrounding city. This marsh was a human construct dug out of the polluted mudflats, but it was designed to appear like a natural salt marsh around which the city had happened to grow. Time and change, process and purpose are expressed by its shape—a bowl with an irregular edge—and the pattern of plants—bands of grasses and shrubs variably tolerant of fluctuating water levels; even when riverflow was low, its form recalled the floods that it was designed to receive.

Olmsted's imitation of "wild" nature represented a divergence from the prevailing pastoral and formal styles, both of which were domesticated landscapes and abstractions of nature. In this approach, Olmsted heeded the admonition of his contemporary,

George Perkins Marsh (1864, p. 35), who advocated that "in reclaiming and reoccupying lands laid waste by human improvidence or malice . . . the task . . . is to become a co-worker with nature in the reconstruction of the damaged fabric." The Fens and the Riverway, in their time, represented a new aesthetic for the urban landscape. Juxtaposed to the urban districts which grew up around them, of sufficient scale to hold their own against the large buildings at their edge, and recalling the original condition of the land prior to colonial settlement, they initiated a powerful and poetic dialogue. Imitation of nature was, in this case, a successful design strategy. Today, one must know their history to fully appreciate them as "designed" rather than "natural" landscapes. Olmsted's contemporaries, however, knew full well that they were built, not preserved.

The design for the Fens and Riverway were not produced overnight, nor did they spring from the mind of a single genius. They were the culmination of public dialogue about the future shape of Boston that extended over decades. This dialogue consisted of published proposals by private citizens, including landscape architects and lawyers, and of debates at public hearings, including a meeting at Faneuil Hall in 1876 advertised by its organizers as "Parks for the People."¹⁹ This sustained public dialogue not only produced ideas that were later incorporated in Olmsted's design, it also generated the support necessary to implement these ambitious projects.

The Fens no longer serves the flood control and water quality functions for which it was primarily intended. Nevertheless, its form and the form of the surrounding neighborhoods for which it served as a skeleton, survive and still carry meaning. The Fens stands as a model of how a former generation of Bostonians dealt with the identical environmental problems that face their city today: water pollution and flooding, transportation, and the need to forge new roles for public open space. The Fens, as originally constructed, extended the metaphor of garden and the notion of cultivation that it embodies to the larger environment. The Fens and Riverway provide a structure for a public realm within which the city has unfolded, one that



Figure 12. The Patio de la Rreja in the Alhambra, Granada, Spain. The presence of water imbues this patio, physically and symbolically. Water spills from its source in the fountain onto the pavement, its sound amplified by the surrounding walls. Photograph by Anne Spirm, 1984.

also reveals and intensifies the natural rhythms and patterns of the place that is Boston.

Function, Feeling, and Meaning

The overlay and interplay of natural and cultural processes can be employed consciously in urban design (whether in harmony or calculated discord), to fuse a connection between feeling, utility, and meaning. The form of the Fens and Riverway, for example, represents and reveals overlapping natural and cultural processes whose congruence adds layers of meaning, both functional and symbolic, thereby amplifying the aesthetic experience that each might engender alone.

Water and its use for human purposes has great potential to forge emotional, functional, and cognitive links between people and nature in the city. Water moves through the hydrologic cycle as liquid, solid, and gas; powered by the fire of the sun and the force of gravity, water connects air and earth, and living organisms. Water comprises most of the human body. Water cut the arching river meander at Dinan; water eroded the ancient mountains near Denver; water forms the framework along which floods flow and people

drive through the Fens and Riverway in Boston.

Like a primordial magnet, water pulls at a primitive and deeply rooted part of human nature. Water is a source of life, power, comfort, fear, and delight; it is a symbol of purification, of both the dissolution of life and its renewal. The creation myths of many cultures portray water as the primary element from which life emerged (Eliade 1967).

In a small patio in the Alhambra, a fountain brims with water that trickles slowly over the edge, creating an effect far beyond its volume. This patio is an economical, elegant, and powerful statement on the functions, meanings, and sensuous qualities of water. Water spills from its source in the fountain onto the pavement, its sound amplified by the surrounding walls. Water puddles on the stone floor, and as it evaporates, cools the air. Small, river-worn pebbles, each embodying the action of water over time, are set in a tightly organized, geometric pattern. Elongated black stones form flowing, braided rivers; rounded whitish-gray stones are alternately ground and stars. The stones are set in packed earth that permits water to seep beneath them to

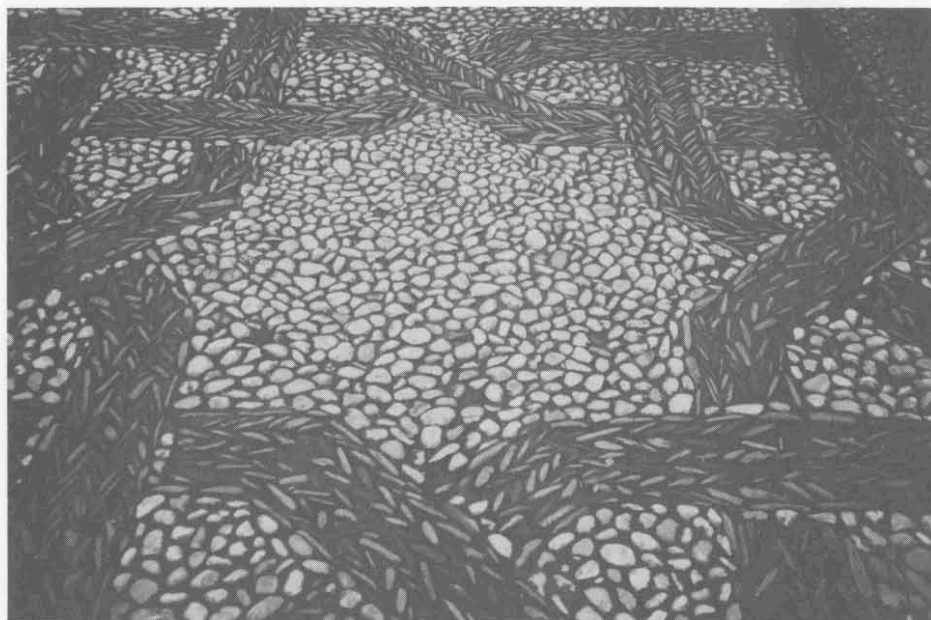


Figure 13. Patio de la Reja. Smooth, river-worn pebbles, each embodying the action of water over time, are set in a tightly-organized, geometric pattern. Photograph by Anne Spirn, 1984.

irrigate the roots of the cedar trees planted at each corner of the courtyard. The whole forms a deep congruence between sensual perception, iconography, and function. "All the rivers run into the sea; yet the sea is not full; unto the place from whence the rivers come, thither they return again." This line from Ecclesiastes and the Patio de la Reja are among the most concise and poetic descriptions of the hydrologic cycle.

Nature and nature's order, processes, and forms are an important source of inspiration for Lawrence Halprin. He makes a distinction, however, between imitation and abstraction, between "copying nature's pictures" and "using her tools of composition" (Halprin 1969). Halprin's notebooks contain many studies of water movement around rocks and of the planes and fracture lines, ledges and talus of rocky slopes (Halprin 1972). In these drawings, he has recorded the progressive abstraction in the transition from mountain environment to urban plaza. At the Portland, Oregon Auditorium Fountain, the progression from small source, to tributaries, to downstream waterfalls is telescoped into a small space. The treatment of water is varied and dynamic; the fountain permits and even invites human

participation. The sheer volume and force of the waterfalls and the mystery injected by the many water sources, some half-hidden, combined with the steep drop from street-level to the base of the fountain and the dense screen of pines, all contribute to an experience of water that resonates with its importance as a source of electric power in this region of rushing rivers.

Since the construction of the fountains in Portland, Halprin's office has designed similar fountains for other cities; some of these are far less successful and demonstrate the pitfalls of abstraction that strays too far from the source of inspiration. In Denver's Skyline Plaza, for example, the fountains are small and sit in a linear plaza that is designed to hold rainfall after a storm, ponding it for a few hours, then releasing it gradually to the sewers—a flood-prevention measure. It is attractive and functional, but when empty, the plaza does not recall the presence of water. Nor do the fountains respond to the special character of the hydrologic cycle as it is expressed on the high plains of Colorado.

Denver has a semi-arid climate; rain falls in cloudbursts which, when augmented by springtime snow melt, swell streams and rivers, swiftly converting meandering trickles to raging

torrents. James Michener (1974, p. 65) has referred to the South Platte, the braided, sediment-clogged river that flows through Denver, as "a sad, bewildered nothing of a river . . . It's a sand bottom, a wandering afterthought, a useless irritation, a frustration, and when you've said all that, it suddenly rises up, spreads out to a mile wide, engulfs your crops and lays waste your farms." These are rhythms that become part of one's life when one dwells in a place.

Denver's metropolitan open space system is also an urban storm drainage and flood control system. The channels, reservoirs, and detention and retention basins which structure the urban landscape are not only congruent with the natural rhythms of the region, but also make these rhythms legible within the city and provide a visible and tangible framework that links downtown, suburbs, and outlying farmland. The form of this parkland reflects the different neighborhoods through which it flows.

Confluence Plaza in downtown Denver is a formal plaza on the South Platte River that is designed to deflect flood-waters and survive periodic immersion. Sometimes its foundations are exposed, and sometimes portions are under water. Like Skyline Plaza, however, it does not exploit the drama of this fluctuation. Harvard Gulch is a suburban storm drainage channel and linear park designed by Wright Water Engineers as a replacement for a narrow, dirt gulch which once flooded the adjacent houses. The original plan called for an underground storm sewer; now, the water emerges from under the street into a park whose sinuous land forms echo the movement of water, even when there is only a small trickle flowing. A line of dried grass lying midslope marks the reach of the last storm. Where the level of the channel drops, a weir breaks the erosive force of the water. At high water the weir is exciting to watch, but even at low water its form is pleasing and meaningful, recalling the power of water at high flow.

Many advances to health and safety introduced in cities over the past century have distanced us from the water that sustains us and have disguised its cycling through the environment. As rain falls to the ground, it is

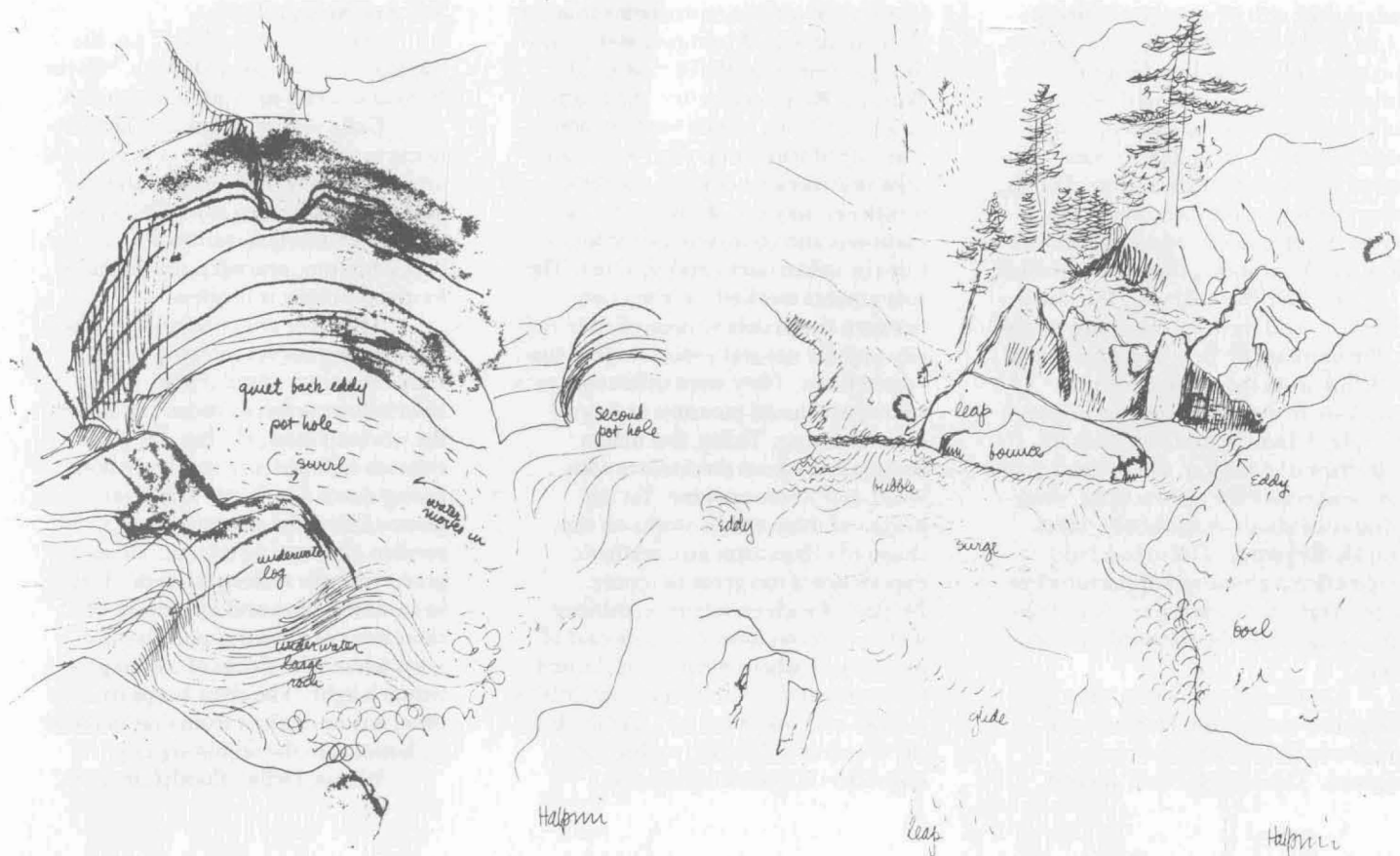


Figure 14. Studies of water movement in the Sierras. Drawings by Lawrence Halprin, from *Notebooks* (1972). Reprinted courtesy of MIT Press.

quickly directed to drains and carried off; after we use water, it is flushed away into underground pipes and transported to sewage treatment plants, which, like garbage dumps, are tucked into forgotten corners of the city. When this is done, an important opportunity for connection is forfeit.

Werribee Farm in Melbourne, Australia is a 27,000 acre park that treats 60 percent of the sewage from a metropolitan region of nearly three million people and supports a cattle and sheep station that is comparable in size to the largest farms in southern Australia. The farm's landscape is diverse, including lagoons, canals, pastureland, and estuary. Sewage effluent irrigates and fertilizes pastureland which supports a herd of 15,000 cattle, with 7,000 new calves born each winter, and a sheep flock ranging from 30,000 to 70,000 animals. The cattle and sheep are fattened, then slaughtered and sold for meat, thereby yielding a financial return that substantially

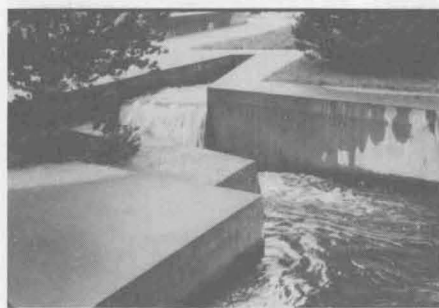


Figure 15. Portland Forecourt Fountain, by Lawrence Halprin. Photographs by Anne Spirn, 1975.

reduces the cost of sewage treatment. Much of the farm is open to the public. Residents of Melbourne visit to watch the grazing animals, as well as the farm's varied bird population, which consists of more than 200 species, including ground birds, arboreal birds, birds of prey, seabirds, and swamp-birds. A self-guided tour leads visitors through the process of water treatment.

The hydrologic cycle, the nutrient cycle, and the food chain are essential to human life; they sustain us, and they link us to the environment in which we live and to the other organisms, both human and non-human, that share our habitat. Yet to most people these cycles are abstractions, something read about in textbooks, then quickly forgotten. The urban landscape affords abundant opportunities to celebrate these cycles, to make legible and tangible the connections they forge.

Landscape architects, urban designers, and architects have progressively narrowed their scope of concern. The aqueducts of ancient

Rome were artistic monuments that celebrated the feat of bringing water into the city from afar; the fountains of Baroque Rome celebrated the reconstruction of that public water system. The introduction of public water supplies to American cities in the nineteenth century was the occasion for celebrations and commemorative fountains in urban parks and squares. The monuments marked a connection between the people who dwelled in the city and the natural processes that sustained them. They were utilitarian, a source of sensual pleasure and symbolic meaning. Today, few urban designers concern themselves with water and sewer systems. Yet the impact of these public works on the shape of urban form and aesthetic experience is too great to ignore. Neglect of such concerns, combined with a focus on form that is devoid of meaning or whose meaning is limited to an arcane discourse, not only forfeits a sense of connection, but also leads to the creation of a public realm that engenders a sense of alienation.

We Are Storytellers

"We are story tellers," say the dwellers of a city named Della. "In the form of our city are unfolding stories."

Della's most prominent natural features are the river that cuts graceful arcs along the valley bottom and the hills that rim it; the city of Della has evolved within this framework of river, valley bottom, and surrounding hills for the past four centuries.

The river is a powerful presence; its sweeping curves interrupt and soften the city's angular grid. The river's flowing force erodes and erases the works of man; ebbing, the river releases sediments from suspension, laying down new land. The river's phases follow the seasons: brown and swollen after spring storms; full and green with the reflected leaves of trees in summer; blue and still under the clear skies of autumn; and choppy grey, white with flecks of ice, in pale winter's light. The river keeps its own time, a time distinct from that marked by humans in the adjoining city.

Within Della's floodplain park,



Figure 16. Harvard Gulch, a suburban storm drainage channel and linear park in Denver. Photograph by Anne Spirn, 1985.

landforms molded to absorb, deflect, and concentrate the floodwaters' force form sensuous curves across the landscape. At some places, these landforms broaden into wide amphitheatres that dissipate the force of floods; at others, they pinch together, constricting the water's flow and magnifying its power. Two lines of square marble pavers set flush in the grass chart paths through the park. One marks the limit reached by the Great Flood; the other marks the extent of the "normal" annual flood. The character of the riverbanks is varied; whether urbane and elegant or wild and rugged, the riverbanks provoke a dialogue with the districts through which the river moves. Ponds within the floodplain park hold the water of heavy, summer storms and cool the air as it flows over them. The floodplain park extends from downtown into the outlying countryside: from the Mall, with its canal a green axis that penetrates the city's heart, to the river's tributaries which form green tendrils reaching into the rural uplands.

At intervals along this enormous floodplain park, at the confluence of tributary and river, are water purification parks. Each receives used water from the urban watershed it serves, and here the water is purified: first in a purification plant; then within the lagoons, marshes, and fountains of the park. Treated water is pumped nightly to reservoirs on the hills above the city, from which it flows downward to irrigate parks and gardens; then it is purified further as it seeps through the soil to replenish groundwater and to augment the river's flow during summer drought. The water wardens who manage this treatment and cycling process are knowledgeable about all aspects of water behavior and use. Every schoolchild spends one day each year with a water warden, learning to direct the play of water through the city.

In the midst of the city is a plaza that celebrates both the daily and seasonal cycles of nature and the ceaseless human activities of commerce, sport, sociability, and politics. Buildings enclose the plaza on three sides, none so tall as to block the sun on a winter's day. Several rows of trees form the fourth side, the one opposite City Hall. Their arching branches mark the entry to a park whose central feature is a

canal that stretches from the plaza to river's edge a mile away.

Stones form the plaza's floor. Those that lie within heavily trodden areas are flat, worn smooth over the years by the passage of feet. Rounded cobbles from the riverbed, weathered by water, are embedded within the fountain at one end of the square.

The fountain is at its most exuberant and showy on a hot summer's afternoon when the sun shines through spray and mist sparking rainbows. As water evaporates off wet pavement, it cools the air. In the autumn, the fountain bubbles softly, feeding still pools, disturbed only by the ripples of flowing water that reflect the color and activity on the plaza. In winter, water freezes into ice crystals as it trickles from the fountain, its color varying with thickness, its motion captured in ever-shifting forms. The sound of water moving under the ice and the gradually changing color and transparency of the ice as it thaws mark the transition from late winter to early spring.

The play of water in the fountain is never the same. As air temperature rises or falls and as people enter or leave the plaza, water volume swells and diminishes. The fountain's pumps, checkdams, spigots, and nozzles are controlled at will; some can be pushed, slid, or turned by a single child, while others require the combined strength of two or more people. The water in the fountain is concentrated or dispersed and the pattern of its flow varied as pumps lift the water, as checkdams are shifted or slid into place, as spigots are opened or closed, and as nozzles are turned to produce a fine mist or a line. Sometimes the play of water is a riot of random patterns; sometimes it is orchestrated through the coordinated efforts of the players.

Water leaves the fountain along runnels that feed a series of pools in a depressed section of the square. Normally only the pools at the bottom of the basin are filled, but after a storm the basin fills with runoff from surrounding pavement. One can always gauge the magnitude of a rainstorm by how high the water reaches in the stepped basin. Only once in the last ten years has the water reached the top step.

At one end of the basin, water flows over a lip into a broad canal that

extends from the steps at the plaza's edge through a long park to the river; from subsidiary pools it flows into runnels that irrigate the trees lining the canal. Where canal meets river, water spills over a series of steps and down long, crenelated chutes. Steps on either side afford a portage for the shallow-bottomed boats that are so popular among Dellans. On a weekend afternoon, these light craft fill the canal, moving up and down between river and city center. The tree-lined malls on either side of the canal are popular promenades. In winter, skaters replace the boaters and walkers; the river seldom freezes over entirely, but the shallow canal is icy most of the season.

The site of the canal was once a creek with a marshy floodplain, and the elevated spot adjacent to it the city's original settlement. Later, the creek was buried in a sewer and the floodplain filled in; now that original waterway has been reopened into one of the city's most important public spaces. Fountain, mall, canal and the sub-regional water treatment parks were built as part of the reconstruction of the city's water system. Fountain and mall were dedicated at the city's most famous public event, an event commemorated by literature and the arts. Every year on the first of May, the Water Celebration is reenacted. Barges bear the players down the river to the canal where they disembark, mount the steps, and reembark, borne slowly down the canal to the plaza with its fountain. There, before a crowd of thousands assembled along the canal and in the square, the mayor of Della rededicates the fountain, initiating its powerful play for yet another year.

Many changes to Della in recent decades were inspired by proposals in Della's annual Festival of Ideas. Each May, people from all over the city gather on a long, broad riverbank to build ideas in the sand. Anyone may participate, but each must propose a solution to a problem faced by the city. The proposals range from the pragmatic to the fanciful and draw large crowds who are vocal in their appreciation or dissent. The news media feature many of the models, and all are represented in a special exhibit of photographs at City Hall. This event has been so popular that a smaller sand arena was built recently in the park

near City Hall Plaza. The arena features an ever-changing array of sand forms. Many are fantasies and are appreciated as such. Some, however, engender serious debate, ensuing over days and weeks, provoking other sand models in response.

Thus is Della evolving, its storylines retold and extended, new narratives continually unfolding.

Design is a mode of storytelling. Urban design is a process of spinning out visions of the future city that pose alternatives from which to choose; it is a process of describing the shape of the future. The products of design, be they buildings, parks, or sewer systems, not only provide settings for living, they also embody a powerful symbolic language that conveys meaning, expressing the way a society regards itself and the values it upholds or rejects. These meanings are further extended through the process of construction and cultivation, use and neglect, as we dwell in what began as dreams.

Continuity and Revolution

Urban form evolves in time, in predictable and unpredictable ways, the result of complex, overlapping, and interweaving narratives. These stories are all present and ongoing; some are sensed intuitively; others are legible to those literate in the language of the urban landscape. Together, they comprise the context of a place, the storylines that connect the place and all those who dwell within it. When identical urban forms are repeated again and again, across the world, their story becomes boring in its sameness and alienating in its ignorance of the storylines that form the context of place.

Concomitant with the need for continuity, is the need for revolution. Despite certain constants of nature and human nature, we live in a world unimaginable to societies of the past. Our perception of nature, the quality of its order, and the nature of time and space is changing, as is culture, provoking the reassessment of old forms and demanding new forms. The vocabulary of forms—buildings, streets, parks—that comprise our heritage and that are often deferred to or acknowledged as precedents, are a reflection not only of universal needs and values, but also represent a response to cultural processes and values of the time

in which they were formulated. While some of these patterns and forms still express contemporary purposes and values, it is important to remember that they are abstractions. Today the unyielding axes of Versailles and the smug arcadia of Stowe and Stourhead embody an assurance that seems foreign. They stand for views of the world held by seventeenth-century Frenchmen and eighteenth-century Englishmen, but they cannot be normative for current design. What are the forms that express contemporary cosmology, that speak to us in an age when photographs of atomic particles and of galaxies are commonplace, when time and space are not fixed, but relative, and when we, as humans, are less certain of our place in the universe than we once were?²⁰

To conceive new forms that capture the knowledge, beliefs, purposes, and values of contemporary society demands a repeated return to the original source of inspiration, be it nature or culture, rather than the mere quotation or transformation of abstractions of the past.

The current understanding of nature and culture as comprising interwoven processes that exhibit a complex, underlying order which holds across vast scales of space and time, not only demands a new aesthetic, new forms, and new modes of design, construction, and cultivation, but also prompts a fresh appreciation for the forms of the past and the processes by which they were created. Fractal geometry, for example, provides a means of describing and appreciating the geometry of old urban districts which evolved with a peculiar combination of order and disorder, through purposeful process and repetitive use of forms whose precise shape was varied in response to varying conditions of nature, culture, and individual preference. The complex order of such districts is now often highly valued for its variety and quality of “wholeness” in contrast both to the order of new towns where the form of houses and even of such details as exterior paint color and landscaping are prescribed and to modern cities which seem a hodge-podge of idiosyncratic buildings and left-over space.²¹

It is possible to create new places that capture a sense of complexity and underlying order, that express a con-

nection to the natural and cultural history of the place, and that can be adapted to meet changing needs. The solution lies in an understanding of the processes that underlie these patterns, and there are some principles that can be derived for urban design: establish a framework which lends overall structure—not an arbitrary framework, but one congruent with the “deep” structure of a place; define a vocabulary of forms that expresses natural and cultural processes; then encourage a symphony of variations in response to the conditions of a particular locale and the needs of specific people. The result should be a dynamic, coherent whole that can continue to evolve to meet changing needs and desires and that also connects the present with the past.²²

Such a proposition poses a challenge to conventional methods of planning, design, construction, and management of the urban landscape and the structures and spaces of which it is composed. It calls for a more inclusive dialogue about values and visions, and for tapping the invention and energy of individuals in small-scale construction and cultivation. For designers, new techniques of notation and representation are required. Conventional techniques are inadequate to the portrayal of time and change, and they encourage the continued focus on visible and static form. Designers may consider time and change and such sensations as sound, smell, and movement, but do not have the means to notate these ideas beyond the rudimentary level.²³ Music, dance, and film are arts of movement, and contemporary modes of notation and representation in these fields offer inspiration. Jazz and contemporary dance, for example, employ a choreographed framework within which players improvise, expanding upon and exploring the themes established in the framework. The computer also provides the means to display patterns generated by processes of nature and culture to enable the perception, manipulation, and evaluation of patterns and forms as they emerge and change over time.

The issues of time and change, process and pattern, order and randomness, being and doing, and form and meaning inherent to the theory

outlined here are also central to contemporary explorations in music, art, literature, and science. Indeed this theory and the aesthetic it embodies will bring urban and landscape design in tune with theoretical currents in other fields. Ultimately, however, the urban landscape is more than a symphony, a poem, a sculpture, a dance, or a scientific experiment. It is the setting in which people dwell, living every day. This aesthetic, as applied to the urban landscape, must provide satisfaction on multiple levels: on the level of the senses aroused, the functions served, the opportunities for "doing" provided, and the symbolic associations engendered. These multiple layers of meaning, when congruent, will resonate, combining complexity and coherence, amplifying the aesthetic experience of the city.

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Notes

1. My point of departure is that of John Dewey (1934) in *Art as Experience*: that aesthetic experience has its roots in the experience of everyday things, that art is prefigured in the very processes of living. I share with Dewey (1934, p. 339) the belief that "the sense of relation between nature and man in some form has always been the actuating spirit of art."

2. Scholarship on the history of urban form has focused primarily on settings of power and wealth, whether sacred or secular, rather than on the settings of everyday life (see Ackerman 1980). The shift in historical scholarship from a preoccupation with the powerful and wealthy to a concern for how everyday people lived their lives (Ariès 1962, Braudel 1979) is now also evident in art and architectural history (Clark 1984, Girouard 1985) and this work should prompt us to rethink the role of the designer. These scholars

focus on urban form as the product of a larger, collective society, as well as the product of an individual genius or powerful patron. They treat whole districts where people lived, as well as monumental spaces like St. Peter's Square or the Champs d'Élysées. Still, one of the grandest stories recorded in urban form, the nature of Nature, has barely been told. This is a task for a new generation of scholars.

3. The aesthetic outlined in this essay is implicit in my book *The Granite Garden: Urban Nature and Human Design* (Spirn 1984). The many case studies described in *The Granite Garden* should be seen as additional examples to those presented here, each embodying some of the dimensions of this aesthetic. The tradition to which this theory belongs has emerged over the past three decades. See McHarg (1967, 1969), Lynch (1958, 1972, 1981), Halprin (1969, 1972a, 1972b), Alexander (1975, 1977, 1979, 1985, 1987), Koh (1982), Spirn (1984, 1985, 1986), Nohl (1985), Howett (1987). The evolution of this theoretical tradition has been parallel to developments in other fields.

4. Appleton (1975) formulated an aesthetic of landscape rooted in human experience, specifically, the needs for shelter, food and water, and defense (prospect-refuge theory). This essay argues that other basic human needs, both physical and psychological, and other cultural processes also contribute to the aesthetic experience of the landscape, especially in the densely built and populated urban landscape.

5. See Albritton (1986) and Gould (1987) for descriptions of the change in perception of the scale and nature of time over the past few centuries, and Hawking (1988) for views revealed by contemporary science.

6. The terms "human time" and "human order," as used in this essay, refer to measurements of time and space as calibrated by human cultures and to patterns introduced on the landscape for cultural purposes. The distinction made here between "natural" and "human" by no means implies that the latter is unnatural, but rather serves to distinguish the result of processes that operate independently of conscious human intervention from those which do not.

7. I have spoken with numerous people who live or work near "Time Landscape" and who have passed by many times without "seeing" it. This raises important questions about when and how imitation of nature is a successful design strategy. In the urban landscape, the treatment of scale, context, and edge are key to success.

8. See Count Giuseppe Panza di Biumo's eloquent description of his experience of Turrell's "Sky Space" (Brown 1985).

9. The phrase, "the pattern that connects," is Gregory Bateson's; see *Mind and Nature: A Necessary Unity* (Bateson 1980).

10. In many ways the name "Chaos" is a misnomer since it implies disorder, whereas science increasingly reveals an elegant order underlying what was previous seen as disordered. This work in "chaos" builds on that of the past, and many of the subjects described in Gleick (1987) are familiar—snowflakes, turbulence in fluids, the fact that trouble comes in bunches (the mythical 100-year flood, for example, that occurs three times in a single decade), and the phenomenon of scaling—the congruence of patterns from the minute to the colossal. See also Mandelbrot (1983) and Hawking (1988).

11. See Butterfield (1957) and Hawking (1988)

for descriptions of the evolution of the concept of motion.

12. Pythagoras (fifth century B.C.) believed that the stars, the planets, the sun, and the moon revolved around the earth, each carried on a separate, rotating sphere. "The music of the spheres" was imagined as the harmonious sound produced by the friction among them. Centuries later, Kepler also emphasized the aesthetic aspect of his theory of planetary motion. In *The Harmony of the Worlds*, Kepler (1619) wrote musical notes representing the sounds of the planets as they moved in their orbits.

13. Some of these implications have been explored in recent work by geographer E. Relph (1976) and architectural theorist, Christian Norberg-Schulz (1985). These publications have been seminal for recent theories of architectural and urban form.

14. The homes designed by Australian architect Glenn Murcutt are an exemplary exception. (Drew, 1985). Residents of Murcutt's buildings can adjust windows, walls, and even roofs in response to light, temperature, and wind. Murcutt has compared living in one of his houses to sailing a boat (personal communication). In this respect, his buildings recall the wind-catchers (malqaf and badgir) and wind-escapes of traditional Islamic architecture in the Middle East.

15. These are clearly seen in old city views such as those in Braun and Hogenburg's (n.d.) sixteenth-century atlas.

16. Refer to Kaplan (1973) and Francis (1985).

17. Mark Francis (1985) has documented a preference among certain city dwellers for community gardens over conventional parkland.

18. This project linked "grassroots" community organization and development with the education of graduate students in landscape architecture and job training in landscape construction and management for unemployed youths. The project used city funds set aside in an experimental program to foster open space improvements by local groups on vacant land. For two years, in 1984 and 1985, I taught a studio at Harvard's Graduate School of Design that produced this and another built garden. Each student created a design for the garden and presented his or her proposal to community residents who were responsible for. The number and variety of alternatives did not confuse the community members who were charged with selecting a single design, but rather served to crystalize the available options and enabled the group to reach a consensus fairly quickly.

19. The first city plans in nineteenth-century Boston were for urban open spaces that were proposed as integrated systems of parkland, roads, pleasure drives, and sewer and water lines—the infrastructure of the city. Copeland's (1872)

"The Most Beautiful City in America: Essay and Plan for the Improvement of the City of Boston" and Charles Eliot's (1893) plan for Boston's Metropolitan Park System were articulate proposals, by landscape architects, for metropolitan development that still stand as models for the field.

20. Perhaps the contemporary fascination with the landscapes built by prehistoric cultures and the inspiration these places have had for contemporary sculpture is due, at least in part, to the recent, perceived diminution of the human in the face of nature.

21. This quality of "wholeness" in urban form built by certain societies of the past has long fas-

cinated designers. Christopher Alexander (1987) has recently articulated a set of formalistic rules for achieving such a quality in the contemporary city. These rules, however, focus on the outward appearance of urban form and on processes of design and construction and neglect both the meaning of that form and the natural and cultural processes to which urban form is an adaptation or an expression.

22. Some of these issues are already being explored in urban design. Lynch's (1958) article on adaptability remains a classic. There is also a growing literature on the idea "place" and the engagement of the people who do or will live in a place in the process of designing and building it. Although Alexander (eg. 1975, 1977, 1979), Kroll (1984, 1987a, 1987b), and others for whom these are important concerns express an appreciation for natural features of the landscape, they focus on cultural processes and neglect natural processes. This is particularly evident in Alexander's (1977) pattern language, where "patterns" associated with natural features and the rules for their application are static and divorced from the processes that give them form.

23. Halprin's use of "scores" are explorations in the notation of movement that remain singular in the profession.

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