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

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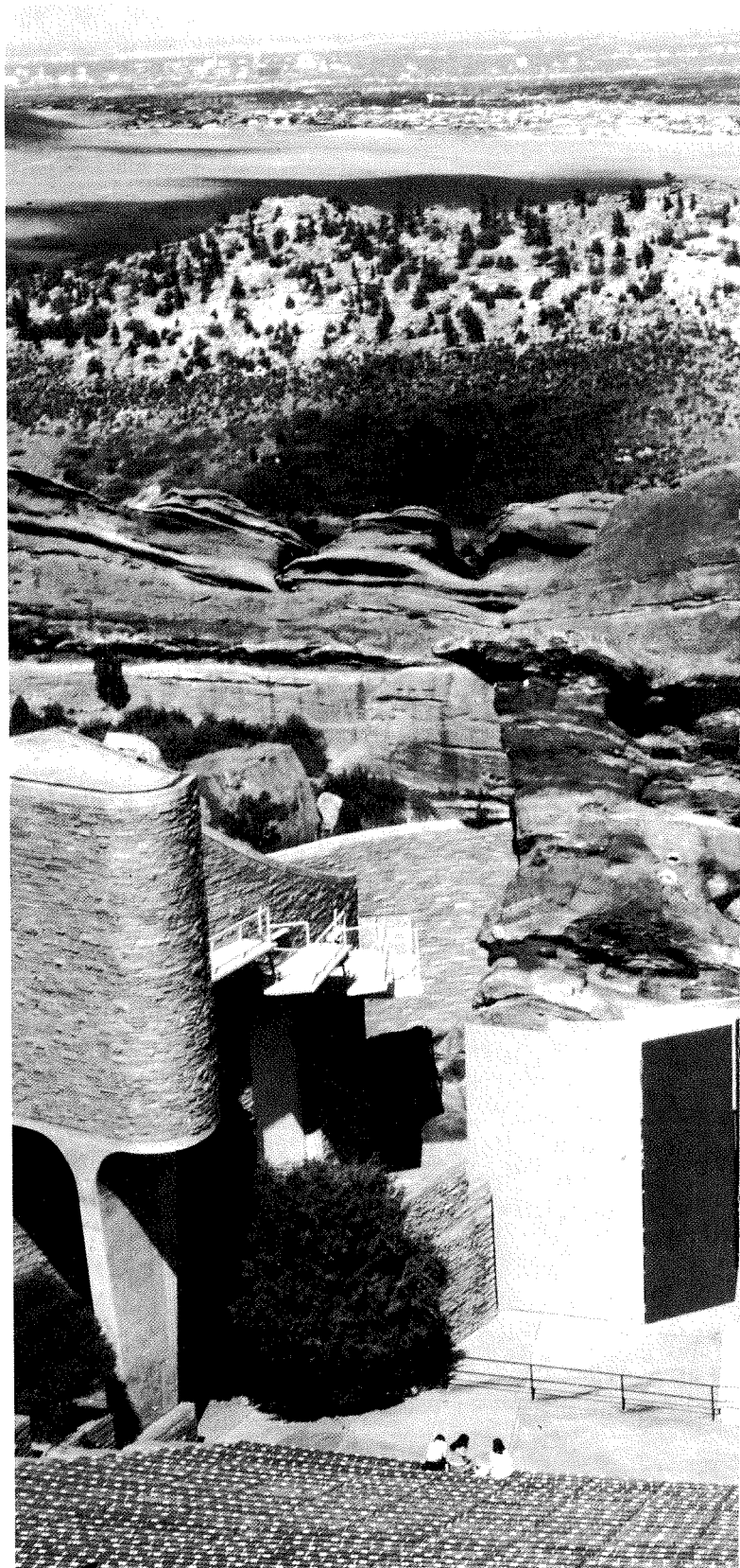
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The city has been compared to a poem, a sculpture, a machine. But the city is more than a text, and more than an artistic or technological artifact. It is a place where natural forces pulse and millions of people live—thinking, feeling, dreaming, doing.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

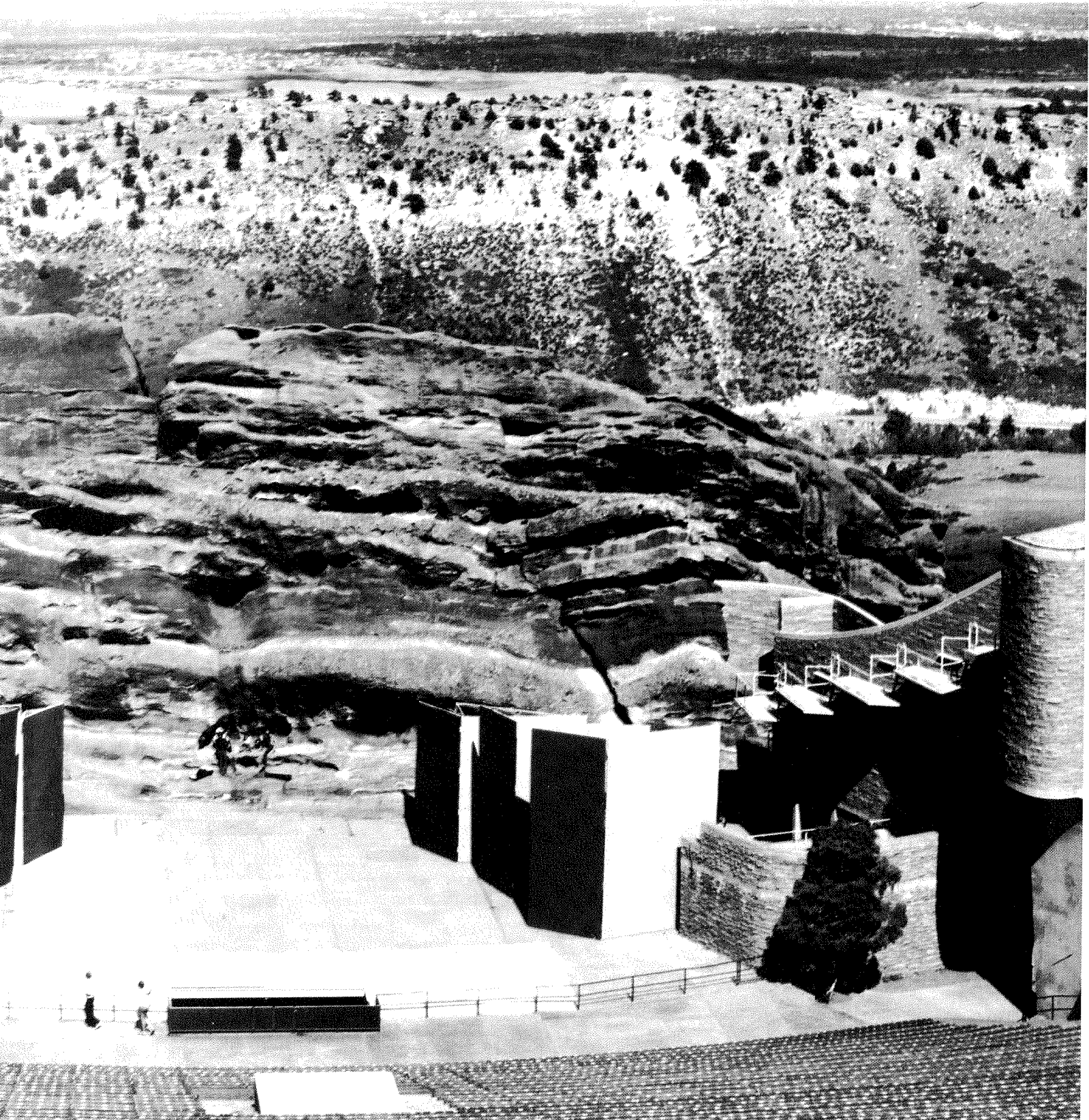
I want to describe the dimensions of such an aesthetic. This aesthetic encompasses both nature and culture; it embodies function, sensory perception, and symbolic meaning; and it embraces both the making of things and places and the sensing, using, and contemplating of them. This aesthetic is concerned equally with everyday things and with art: with small things, such as fountains, gardens, and buildings, and with large systems, such as those that transport people or carry wastes. This aesthetic celebrates motion and change, encompasses dynamic processes rather than static objects and scenes, and 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, and one that demands both continuity and revolution.

Urban form evolves in time, in predictable and unpredictable ways, the result of complex, overlapping, and interweaving dialogues. These dialogues are all present and ongoing; some are sensed intuitively; others are clearly legible. Together, they comprise the context of a place and all those who dwell within it. This idea of dialogue, with its embodiment of time, purpose, communication, and response, is central to this aesthetic.



# THE POETICS OF CITY AND NATURE:

## Toward a New Aesthetic for Urban Design



Concomitant with the need for continuity in the urban landscape 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 perceptions of nature, the quality of its order, and the nature of time and space are changing, as is our culture, provoking the reassessment of old forms and demanding new ones. The vocabulary of forms—buildings, streets, and parks—that are often deferred to as precedents not only reflects universal needs and values, but also represents a response to cultural processes and values of the time in which those forms were created. Some of these patterns and forms still express contemporary purposes and values, but they are abstractions. What are the forms that express contemporary cosmology, that speak to us in an age in which photographs of atomic particles and of galaxies are commonplace, in which time and space are not fixed, but relative, and in which we are less certain of our place in the universe than we once were? Conceiving of new forms that capture the knowledge, beliefs, purposes, and values of contemporary society demands that we return to the original source of inspiration, be it nature or culture, rather than the quotation or transformation of abstractions of the past.

### **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.”<sup>1</sup> Before humans built towns and cities, our habitat was ordered primarily by nature’s processes. 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, tugging the tides; and the annual passage of the seasons.

In contrast to the repetitive predictability of daily and seasonal change is the immensity of the geological time scale. From a 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.

The perception of time and change is essential to developing a sense of who we are, where we have come from, and where we are going, as individuals, societies, and species. Design that fosters and intensifies the experience of temporal and spatial scales facilitates both a reflection upon personal change and identity and a sense of unity with a larger whole. Design that juxtaposes and contrasts nature’s order and human order prompts contemplation of what it means to be human. Design that resonates with a place’s natural and cultural rhythms, that echoes, amplifies, clarifies, or extends them, contributes to a sense of rootedness in space and time.

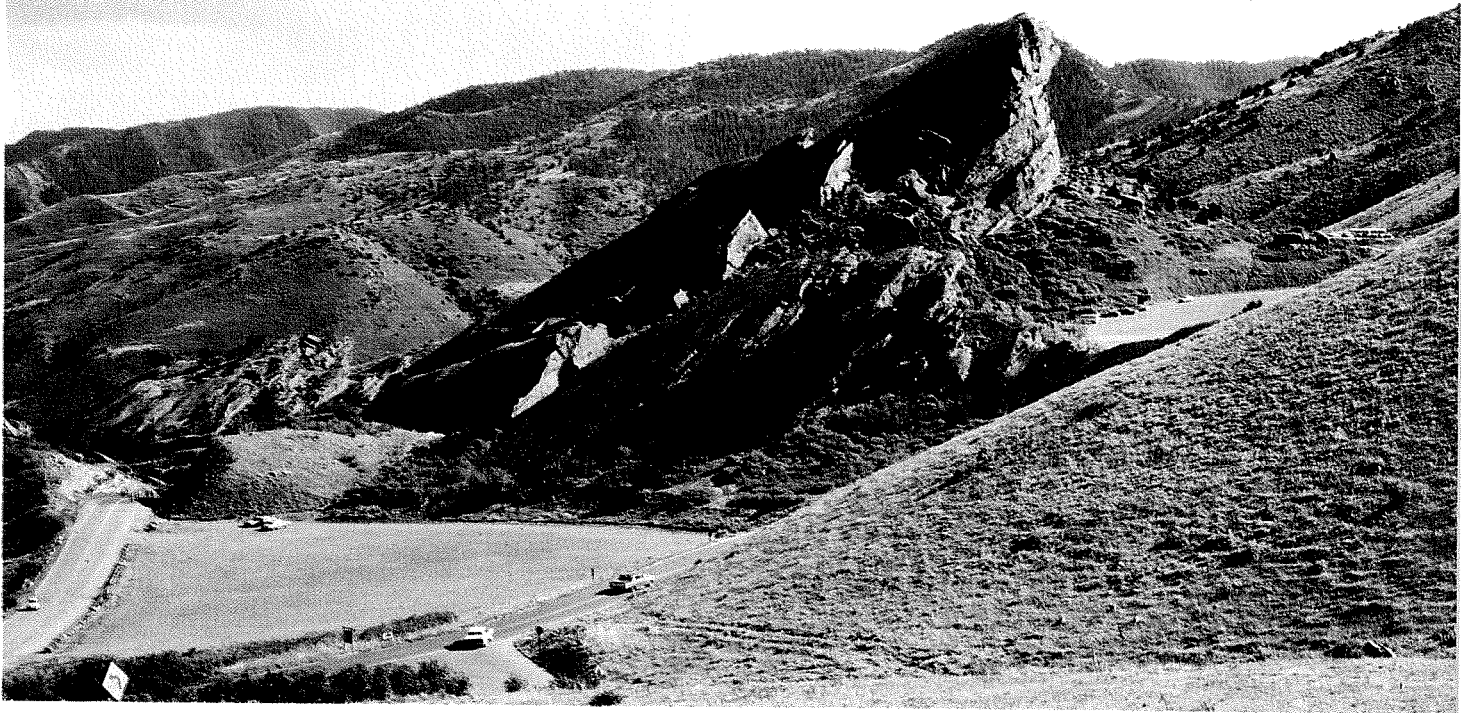
### **Process, Pattern, and Form**

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 in these foothills, its flat stage dwarfed by the red slabs that frame it and the panoramic view out across the city of Denver, Colorado 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.

**Previous page:**

**Set in the foothills of the Rocky Mountains, Red Rocks Amphitheater affords a view out across the Great Plains and the City of Denver. Photo by Anne Whiston Spirn.**





**These red slabs at Red Rocks Amphitheater are the remnants of rock layers that once arched high over the Rockies.**

**Photo by Anne Whiston Spirn.**

Denver is a city of 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 time, change, and the place of man 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, but

also forfeit a sense of connection to a larger whole beyond ourselves. In contrast, places such as Red Rocks Amphitheater provoke a vivid experience of natural processes that permits 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. However permanent rock may seem, it is ultimately worn smooth by water and 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 the water in the sand of a beach echoes the pattern engraved on the earth by rivers over time.

These are the patterns that connect. 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 flowing water and the branching tree within which the

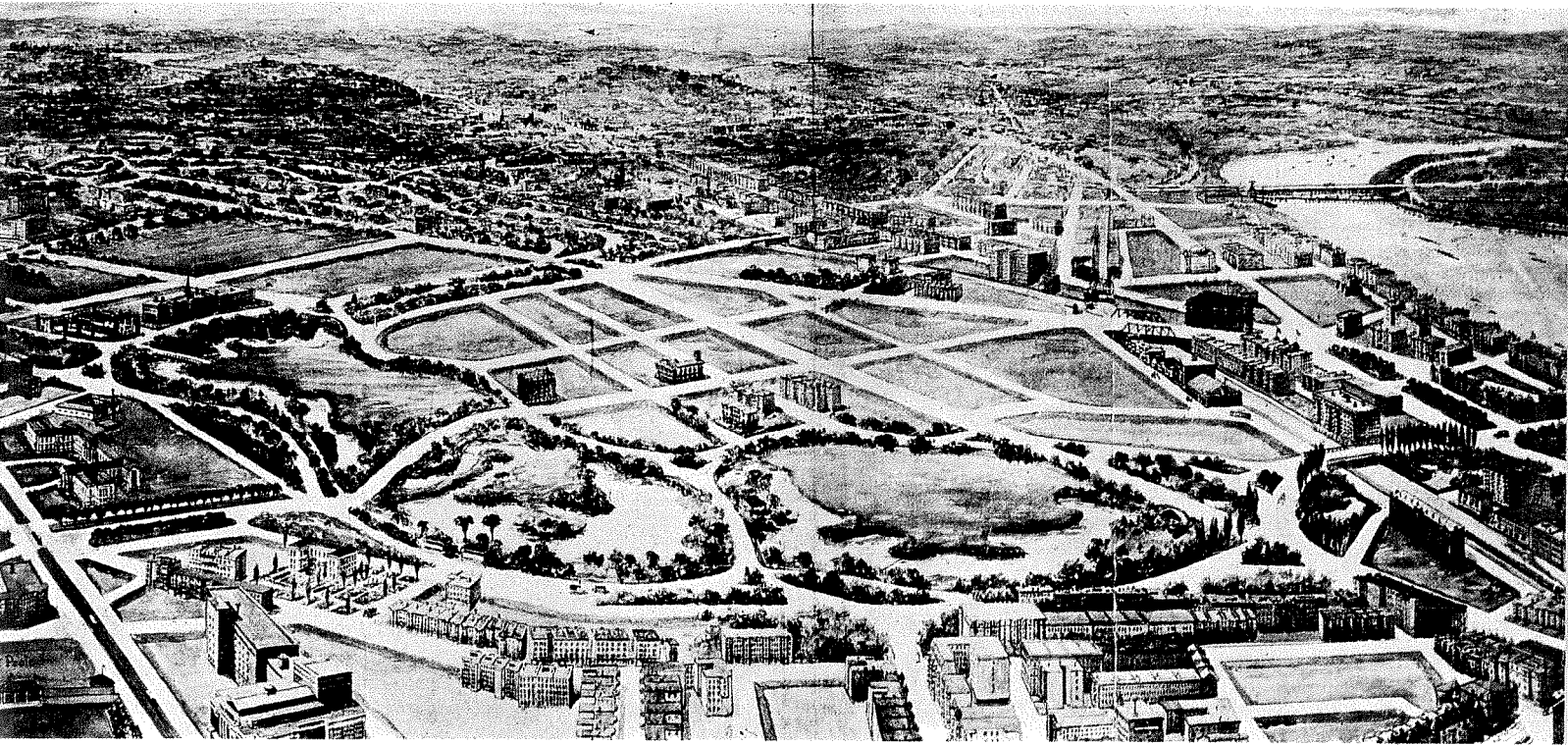






Aerial view of Boston's Fens  
and the surrounding city.  
Photo by Alex S. MacLean/  
Landslides.

Aerial view of Boston's Fens,  
ca. 1925.  
Courtesy of the National Park  
Service, Frederick Law Olmsted  
Historic Site.



sap rises are patterns that 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 science afford new insights into the geometry 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, 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 forms are at equilibrium, at any given moment, with the processes that produced them. 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 calls "the geometry of nature"—"pimply," "pocky," "tortuous," and "intertwined."<sup>2</sup> A sensibility steeped in classical geometry perceives these forms as too complex to describe. However, as fractals, such patterns can be described with simplicity, the result of 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.

Strange and wonderful forms, mirroring those of nature, have been created by repeating a single computer program. Early in the process, the resulting form, as seen on the computer screen appears chaotic; 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. Their subjects are diverse, their objective is to identify the underlying order in seemingly ran-



dom fluctuations. Many of those working in field have expressed their aesthetic attraction to the mathematics of fractal geometry in contrast to what they term the “Euclidean sensibility.”

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 on the belief that rest, not motion, is the natural state; it describes three-dimensional space but neglects time.

That does not mean that 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 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. Perhaps this is the contemporary version of the “music of the spheres.” They resemble a topographic contour map, prompting the realization that landform 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. The patterns that result vary in response to the specific context of natural environment, culture, and the idiosyncrasies 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 the cultural processes respond, introducing new and changing themes, 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 savored at any given moment, evolve continually in time, in both predictable and unpredictable ways, in response 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 identities—their needs, values, and dreams. Making and caring for a place, as well as contemplating these labors and their meanings, comprise the aesthetic experience of dwelling.

This concept, as explored by the philosopher Heidegger, has important implications for designers and planners of human settlements. 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. The pleasing quality of the allotment gardens or community gardens that are popular in both European and North American cities depends upon a gridded framework of plots. Each garden plot 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. 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 ornamental and productive, between pleasurable and pragmatic, between sacred and secular.

It is possible to create urban landscapes that capture a sense of complexity and underlying order, that express a connection to the natural and cultural history of the place, and that are adaptable 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 that 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.

The Fens, in Boston, is such a place. As originally conceived and constructed in the 1880s and '90s, the Fens and its extension in the Riverway were innovative models for public open space that integrated engineering, economics, and aesthetics. The Fens and the Riverway created an integrated system of park, parkway, storm drain, flood detention basin, and streetcar line that formed the skeleton for the growth of adjacent 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 human construct dug out of 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 that it was designed to receive.

Olmsted's imitation of nature represents a divergence from the then prevailing pastoral and formal styles, both of which were domesticated landscapes and abstractions of nature. The Fens and the Riverway, in their time, represented a new aesthetic for the urban landscape. Juxtaposed with 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 a “designed” rather than

“natural” landscape. Olmsted’s contemporaries, however, knew full well they were built, not preserved.

### Function, Feeling, and Meaning

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, both past and present, are clearly embodied in urban form. The design for the Fens and the 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 from 1860 to 1890. This dialogue consisted of published proposals by private citizens and of debates at public hearings, including one meeting in 1876 that the organizers called “Parks for the People.” This sustained public dialogue not only produced ideas that were later incorporated in Olmsted’s design, but also generated the support necessary to implement these ambitious projects.

Urban form that exploits and celebrates natural and cultural processes and the structure they create provides a framework within which the city can unfold, one that also reveals and intensifies the natural and cultural rhythms and patterns of the place. 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. When the form of the city represents and reveals overlapping natural and cultural processes, the congruence of these processes 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 have great potential to forge emo-

tional, functional, and cognitive links between man and nature in the city. There is a patio in the Alhambra that is an economical, elegant, and powerful statement about the functions, meanings, and sensuous qualities of water. The sound of water spilling from a fountain is amplified by the surrounding walls. The water collects in 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 are alternately ground and stars. The stones are set in packed earth that permits water to seep beneath them and irrigate 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 came, 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 its order, processes, and forms are an important source of inspiration for Lawrence Halprin. He makes a distinction, however, between mimesis and abstraction, between “copying nature’s pictures” and “using her tools of composition.”<sup>3</sup> Halprin’s notebooks contain many studies of water movement around rocks and of the planes and fracture lines, ledges, and talus of rocky slopes.<sup>4</sup> In these drawings, he has recorded the progressive abstraction in the transition from mountain environment to urban plaza. At the Portland Auditorium Fountain, the progression from small source, to tributaries, to downstream waterfalls is telescoped into a small space. The fountain permits and even invites human participation. The sheer volume and force of the waterfalls, the mystery injected by the many water

sources, some half-hidden, 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.

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.

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 quickly directed to drains and carried off; after we use water, it is flushed away into underground pipes and transported to sewage treatment plant, which, like garbage dumps, are touched into forgotten corners of the city.

Landscape architects, urban designers, and architects have progressively narrowed their scope of concerns. 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 monuments marked a connection between the people who dwelled in the city and the water 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.

In Denver, the metropolitan open space system is planned and designed to also function as an urban storm drainage and flood control system. The channels, reservoirs, and detention and retention



basins that 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, whether a downtown plaza that is also a detention basin, accepting and revealing the rise and fall of water, or a suburban storm drainage channel whose sinuous landforms echo the movement of water, even when there is only a trickle flowing. The original plan for this drainage channel called for an underground storm sewer; now, the water emerges from under the street into a park. 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.

### Continuity and Revolution

The current understanding of nature and culture as comprising interwoven processes that exhibit a complex, underlying order that 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 understanding the geometry of old urban districts that 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 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 hodgepodge of idiosyncratic buildings and left over space. The insights gained through fractal geometry and recent work in chaos also provide the means to design new places can evolve and adapt to changing needs and that can embody both variety and coherence.

Such a proposition poses a challenge to conventional methods of planning, design, construction, and management of the urban landscape and the structure 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. Music, dance, and film are arts of movement, and contemporary modes of notation and representation in these fields offer inspiration, as do Lawrence Halprin’s exploration of scoring. Jazz and modern dance, for example, employ a choreographed framework within which players improvise, expanding upon and exploring the themes established in the framework. The computer can also provide the means to display patterns generated by processes of nature and human 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, and science. Indeed, this theory and the aesthetic it embodies will bring urban 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.

*A longer version of this article appeared in Landscape Journal, winter 1989.*

### Notes

1. Paul Klee, “Ways of Nature Study,” in *Notebooks, Volume One. The Thinking Eye*, edited by Jurg Spillier (London: Lund Humphries, 1961).
2. Benoit Mandelbrot, *The Fractal Geometry of Nature* (New York: W. H. Freeman, 1983).
3. Lawrence Halprin, *R.S.V.P. Cycles* (New York: George Braziller, 1969).
4. Lawrence Halprin, *Cities* (Cambridge, MA: MIT Press, 1972), and *Notebooks: 1959-1971* (Cambridge, MA: MIT Press, 1972).



**The Patio de la Reja  
in the Alhambra, Granada,  
Spain. The presence of water  
imbues this patio,  
physically and symbolically.  
Photo by Anne Whiston Spirn.**