

## *Prologue*

### The Granite Garden

**S**EEN FROM SPACE, the earth is a garden world, a planet of life, a sphere of blues and greens sheathed in a moist atmosphere. At night, lights of the cities twinkle far below, forming constellations as distinct and varied as those of the heavens beyond. The dark spaces that their arcs embrace, however, are not the voids of space, but are replete with forests and farms, prairies and deserts. As the new day breaks, the city lights fade, overpowered by the light of the sun; blue seas and green forests and grasslands emerge, surrounding and penetrating the vast urban constellations. Even from this great distance above the earth, the cities are a gray mosaic permeated by tendrils and specks of green, the large rivers and great parks within them.

Homing in on a single constellation from hundreds of miles up, one cannot yet discern the buildings. But the fingers and patches of green—stream valleys, steep hillsides, parks, and fields—swell and multiply. The suburban forest surrounds the city; large lakes and ponds catch the sunlight and shimmer. Swinging in, now only a few miles up, the view is filled by a single city. Tall buildings spring up toward the sky, outcrops of rock and steel, and smaller homes poke up out of the suburban forest. Greens differentiate themselves into many hues. Silver ribbons of roadway flash across the landscape, and stream meanders interrupt and soften the edges of the city's angular grid.

Flying low, one skims over a city teeming with life. The amount of

green in the densest part of the city is astonishing; trees and gardens grow atop buildings and in tiny plots of soil. On the ground, a tree-of-heaven sapling is thriving in the crack between pavement and building, and a hardy weed thrusts itself up between curb and sidewalk. Its roots fan out beneath the soil in search of nutrients and water. Beneath the pavement, underground rivers roar through the sewers.

The city is a granite garden, composed of many smaller gardens, set in a garden world. Parts of the granite garden are cultivated intensively, but the greater part is unrecognized and neglected.

To the idle eye, trees and parks are the sole remnants of nature in the city. But nature in the city is far more than trees and gardens, and weeds in sidewalk cracks and vacant lots. It is the air we breathe, the earth we stand on, the water we drink and excrete, and the organisms with which we share our habitat. Nature in the city is the powerful force that can shake the earth and cause it to slide, heave, or crumple. It is a broad flash of exposed rock strata on a hillside, the overgrown outcrops in an abandoned quarry, the millions of organisms cemented in fossiliferous limestone of a downtown building. It is rain and the rushing sound of underground rivers buried in storm sewers. It is water from a faucet, delivered by pipes from some outlying river or reservoir, then used and washed away into the sewer, returned to the waters of river and sea. Nature in the city is an evening breeze, a corkscrew eddy swirling down the face of a building, the sun and the sky. Nature in the city is dogs and cats, rats in the basement, pigeons on the sidewalks, raccoons in culverts, and falcons crouched on skyscrapers. It is the consequence of a complex interaction between the multiple purposes and activities of human beings and other living creatures and of the natural processes that govern the transfer of energy, the movement of air, the erosion of the earth, and the hydrologic cycle. The city is part of nature.

Nature is a continuum, with wilderness at one pole and the city at the other. The same natural processes operate in the wilderness and in the city. Air, however contaminated, is always a mixture of gasses and suspended particles. Paving and building stone are composed of rock, and they affect heat gain and water runoff just as exposed rock surfaces do anywhere. Plants, whether exotic or native, invariably seek a combination of light, water, and air to survive. The city is neither wholly natural nor wholly contrived. It is not "unnatural" but, rather, a transformation of "wild" nature by humankind to serve its own needs, just as agricultural fields are managed for food production and forests for timber. Scarcely a spot on the earth, however remote, is free from the impact of human activity. The human needs and the environ-

mental issues that arise from them are thousands of years old, as old as the oldest city, repeated in every generation, in cities on every continent.

The realization that nature is ubiquitous, a whole that embraces the city, has powerful implications for how the city is built and maintained and for the health, safety, and welfare of every resident. Unfortunately, tradition has set the city against nature, and nature against the city. The belief that the city is an entity apart from nature and even antithetical to it has dominated the way in which the city is perceived and continues to affect how it is built. This attitude has aggravated and even created many of the city's environmental problems: poisoned air and water; depleted or irretrievable resources; more frequent and more destructive floods; increased energy demands and higher construction and maintenance costs than existed prior to urbanization; and, in many cities, a pervasive ugliness. Modern urban problems are no different, in essence, from those that plagued ancient cities, except in degree, in the toxicity and persistence of new contaminants, and in the extent of the earth that is now urbanized. As cities grow, these issues have become more pressing. Yet they continue to be treated as isolated phenomena, rather than as related phenomena arising from common human activities, exacerbated by a disregard for the processes of nature. Nature has been seen as a superficial embellishment, as a luxury, rather than as an essential force that permeates the city. Even those who have sought to introduce nature to the city in the form of parks and gardens have frequently viewed the city as something foreign to nature, have seen themselves as bringing a piece of nature to the city.

To seize the opportunities inherent in the city's natural environment, to see beyond short-term costs and benefits, to perceive the consequences of the myriad, seemingly unrelated actions that make up daily city life, and to coordinate thousands of incremental improvements, a fresh attitude to the city and the molding of its form is necessary. The city must be recognized as part of nature and designed accordingly. The city, the suburbs, and the countryside must be viewed as a single, evolving system within nature, as must every individual park and building within that larger whole. The social value of nature must be recognized and its power harnessed, rather than resisted. Nature in the city must be cultivated, like a garden, rather than ignored or subdued.