Landscape and Urban Planning, 13 (1986) 433–441
Elsevier Science Publishers B.V., Amsterdam — Printed in The Netherlands

LANDSCAPE PLANNING AND THE CITY

ANNE WHISTON SPIRN

Department of Landscape Architecture and Regional Planning, University of Pennsylvania, SWC 34th and Walnut St., Philadelphia, PA 19104 (U.S.A.)

(Accepted for publication 25 July 1986)

ABSTRACT

Spirn, A.W., 1986. Landscape planning and the city. *Landscape Urban Plann.*, 13: 433–441.

It is imperative that landscape planners address the problems of the city. This paper focusses on the case of Boston, M.A., U.S.A., and its derelict lands and degraded water resources. It discusses both the problems and their potential for creative landscape planning.

Landscape planning in the recent past has ignored the city. Some authors have merely omitted all mention of the city, while others have specifically excluded it from the domain of landscape planning. The original aims and scope of *Landscape Planning*, for example, "deal with the use of land which has not been urbanized" (Weddle, 1974). Although this oversight has been remedied by the recent merging of *Landscape Planning* and *Urban Ecology*, the new title, *Landscape and Urban Planning*, perpetuates the misconception that landscape planning and urban planning are somehow different. Despite the recognition that landscape planning, with its base in an understanding of ecological systems, must transcend political boundaries, most landscape planners define their sphere of operations outside city limits. A notable exception is the Federal Republic of Germany, where landscape plans have been prepared for several cities. Several books have also appeared recently on urban landscape planning (Spirn, 1984; Hough, 1984). Concern with the city is confined mainly to the demands it places on the countryside; on resource utilization and waste disposal, on the need of urban populations for recreation space and new residential space.

Yet the city is part of nature; the same natural processes operate in city and countryside, connecting one to the other. Landscape planning, as a field concerned with "the interrelated character of problems posed by nature, man's use of land, and the resulting changes of landscape" (Weddle, 1974), has a major contribution to make in reshaping the city. There is precedent, as well as need, for the participation of landscape planners in city design. Landscape planning and city planning share common roots; in the United States, for example, both grew out of landscape architecture. The theories, methods and techniques of landscape planning are applicable to the design of the city; indeed, they afford a fresh view of urban environmental problems and their interrelatedness. In addition, many, if not most, of the issues of concern to landscape planners in rural environments are closely related to the problems of the city. It is not only appropriate, but imperative, that landscape planners address the problems of the city.

DERELICT LAND AND DEGRADED WATER RESOURCES: THE CASE OF BOSTON

The specific environmental problems faced by a given city and the plans for their resolution will vary. Some cities must contend with recurrent natural disasters; others are prone to serious, prolonged air-pollution episodes. Some cities occupy ground that contains valuable mineral resources; others face growing problems of waste disposal that threaten their water supply. Many American cities, however, share two major problems that directly impact on rural environments nearby: the decline of inner-city neighborhoods and the deterioration of the urban infrastructure, including water supply and sewage treatment systems. Landscape planning, with the comprehensive view of nature it entails, could contribute to the restoration of both.

In the past few decades, there have been dramatic changes in the demographics of American cities, the product of a national housing policy that has favored home ownership and new construction. Between 1963 and 1976, new housing construction in the United States far exceeded household growth (Berry, 1980). This excess construction, most of it outside the city, has contributed to increased vacancy in less desirable, multifamily housing in the inner city. Seen in this light, derelict land in the inner city "is a by-product of overbuilding and excessive land consumption at the outer edge" (Berry, 1980). In some cities, vacant land now comprises 10% of the total land area, and some neighborhoods are more than half vacant. For example, there are approximately 15 000 vacant parcels of land in Boston, Massachusetts; a total of between 3 000 and 4 000 acres, although the City of Boston has no record of the precise number of vacant properties and estimates vary. Although this is primarily a social and political phenomenon, an understanding of natural processes is essential to both the comprehension of where and why vacant lands occur and to their wise re-use.

Vacant land tends to be most abundant in low income neighborhoods. It occurs as small, isolated "missing teeth" and as large tracts under single or multiple ownership. Many lots have remained vacant because of the difficulties they pose to development; others, although once built upon, occupy unfavorable locations – for example, landslide-prone slopes. Groups of vacant lots form constellations of quite distinct patterns; scattered or clumped, connected bands at the edge of a neighborhood, or linked systems that weave through the interior, forming new connections between streets. When viewed together with the social and economic needs of the neighborhoods in which they occur, these different types and patterns of vacant land hold potential for different uses and suggest different treatment.

Given the physical diversity and sheer quantity involved, vacant urban land represents an opportunity for civic design unmatched since the 19th century, when rapidly growing cities set aside large tracts of land for new parks, and laid out new water and sewer systems and entire neighborhoods. When these diverse public improvements were coordinated, they formed a coherent framework within which the growing city evolved. In a city like Boston, with an estimated 15 000 vacant properties, such a reshaping would be unimaginable today without modern computer technology and modeling techniques. Many of those methods developed by landscape planners for use in rural environments are adaptable to landscape planning in the city. In 1984–1985, the author and Denis White of the Harvard Computer Graphics Laboratory supervised a student project by Arlene Davidson that explored how the computer might be used to facilitate the identity of vacant lots suitable for various open-space

uses. Although limited to a few types of open-space uses, the study demonstrated the strong potential for such methods in urban landscape planning.

Research results support the conclusion that there is a strong correlation, especially in neighborhoods subject to severe socio-economic stress, between abandoned land (particularly in large, contiguous tracts) and environmental hazards and nuisances. The correlation between landscape features, historic land use, and vacant urban land was first documented by the author and Heidi Cooke in a Philadelphia neighborhood in 1973 (Master's thesis for the Department of Landscape Architecture, University of Pennsylvania). Similar correlations have since been documented in Boston and Cincinnati. In Boston, floodplains and low-lying marshy areas were filled and built upon later than adjacent higher ground, and became vacant first. Although such areas do not account for all of Boston's vacant land, nevertheless they are significant, especially when one considers future use.

Take the example of the Dudley Street neighborhood in the Roxbury section of Boston (Fig. 1). (The author has used this neighborhood as a case study for research funded by a grant from the National Endowment for the Arts (NEA) in 1984–1985, and as a site for both the urban open space studio and a thesis for which she was principal advisor.) The neighborhood consists of four distinct physiographic units: the lower slopes of a broad plateau; a knoll; a flat lowland; and a valley that separates the two higher land forms. In the 18th and early 19th centuries, the landscape of this neighborhood consisted of estates and farms; the valley bottom was the floodplain of a large stream. Between 1854 and 1906, the landscape changed dramatically. The estates and agricultural fields were replaced, first by large, single-family homes, and then by smaller, attached houses, commerce and industry. The stream in the

Fig. 1. Boston. Dudley Street neighborhood, 1985. This vacant land was the floodplain of a stream, now buried, that was filled and built upon, and then abandoned. In the distance are downtown office towers.

central valley was visible on maps as late as 1884. By 1906, however, most of the floodplain had been filled and built upon, and the stream was buried underground in a large sewer. Between 1964 and 1986 this process was reversed, as the neighborhood became subject to disinvestment and abandonment. Although 30% of the land in the entire neighborhood is now vacant, 90% of the old floodplain is vacant, and only 20% of the knoll is vacant; almost all of those vacancies occuring on the lower slopes. This pattern is repeated within many of Boston's other inner-city neighborhoods: low-lying, poorly drained areas are largely vacant; hilltops and upper slopes are relatively intact. A series of landuse maps representing the years 1854, 1873–74, 1884, 1906, 1943, 1964, 1968 and 1986 were compiled from insurance atlases and field work. The preceding description is derived from an analysis of this map series and a comparison of these maps with maps of topography and physiography. A similar analysis was conducted for other locales in Boston. Early versions of some maps were produced in the 1985 urban open-space studio; most were produced by the author and research assistant Thomas Johnson, under a grant from NEA.

Currently, the redevelopment of vacant urban lands is occuring in a fragmented, haphazard fashion. Even when that redevelopment is planned, the natural processes that contributed to abandonment are being ignored once again. Until recently, for example, a community development corporation in the Dudley Street neighborhood planned to construct housing for low- and moderate-income residents in the abandoned floodplain described above. The architects and planners directing the project were unaware of the environmental causes underlying the extensive vacancy in that location. For the past 2 years, the author has worked with members of the community development corporation and other local organizations to revise those original plans. Central to the revisions is the incorporation of a linear park in the vacant floodplain, which would serve as an attractive framework within which the reconstruction of homes, institutions and businesses could occur. Alternative land plans for such redevelopment have been designed and presented to community residents by landscape architecture students in the author's urban open-space studio at the Harvard Graduate School of Design.

The proposal for a linear park in the Dudley floodplain has broader implications for Boston's landscape. If designed to include a series of stormwater detention basins, the park could contribute to the resolution of one of the city's major environmental problems – the pollution of Boston Harbor. The author has explored this subject in greater detail elsewhere (Spirn, 1985a). That paper outlined a proposed, multi-purpose open-space system that would integrate solutions to problems of polluted and depleted water resources and derelict land. The pollution of Boston Harbor has several causes; a major factor is overloaded sewer overflows during and after storms. Boston's sanitary and storm sewers are combined. Stormwater enters the system rapidly, mixes with sanitary sewage, and produces bursts of sewage that must be treated or released during and immediately after a storm. This combined sewage treatment system is now a liability, but it could be a benefit. For some parameters, like suspended solids and coliform bacteria, the quality of urban stormwater is no better than raw sanitary sewage. A combined system makes it possible to treat this storm runoff. The remaining issue, however, is the prevention of overflows. Detaining stormwater on land affords an opportunity to delay flood peaks and to prevent sewer overflows. Two American cities, Denver and Chicago, have reduced flood peaks by employing a linked system of floodplain parks designed as detention basins to hold stormwater after a rainfall.

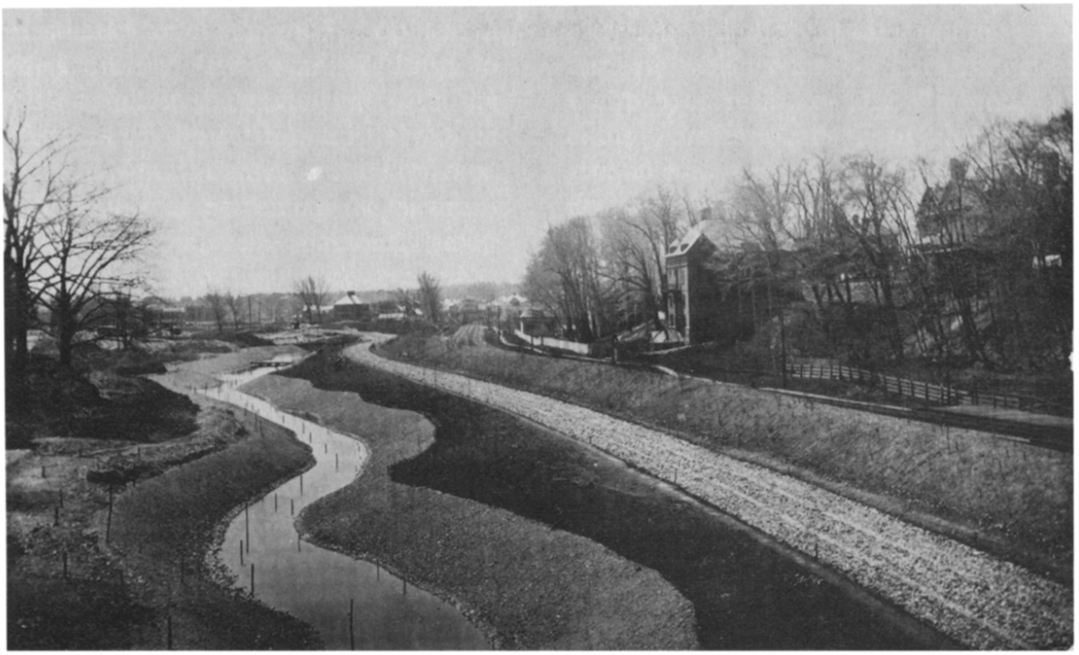

Fig. 2. Boston. The Riverway, ca 1892, under construction. To the right, a mound separates the "park" from a recently installed street-car line. (Courtesy National Park Service, Frederick Law Olmsted National Historic Site.)

Fig. 3. Boston. The Riverway, ca 1920. Same view as above. (Courtesy National Park Service, Frederick Law Olmsted National Historic Site.)

In downtown Denver, stormwater is stored on rooftops, plazas, parking lots and floodplain parks, and then released gradually (Spirn, 1984). Seen thus, the linear park in the Dudley area could be one small piece of a much larger open-space system designed to serve both stormwater detention and recreation functions. The expense of constructing and maintaining such a system could be borne, in part, by funds from the authorities responsible for sewage treatment and flood control.

There is a precedent in Boston for such an open-space system, a precedent which adressed similar issues of flooding, water quality, recreation and new urban development. The Fens and The Riverway, designed by 19th century landscape architect Frederick Law Olmsted, are landmarks in the profession of landscape architecture and the field of landscape planning (Figs. 2 and 3).

In his design for The Fens and The Riverway, Olmsted embraced the philosophy of George Perkins Marsh: "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" (Marsh, 1864). In the mid-19th century, the Back Bay consisted of muddy tidal flats onto which all the sewers of Roxbury emptied; the sewage swept back into the low-lying streets during floods. Olmsted proposed a solution to this problem in the form of a park designed as a flood-storage basin, with gently sloping banks of marsh grasses and other plants that could tolerate changing water levels. The resulting design was a synthesis of environmental engineering and aesthetics; a solution that was revolutionary for its time. Never before, to this author's knowledge, had anyone attempted to *create* a salt marsh. The planting design required considerable research and professional courage.

Although the primary purpose of The Fens was the abatement of a hazard to public health. Olmsted sought to "thriftily turn to account" these necessary improvements to provide other benefits as well: an attractive framework that would encourage private investment, thereby increasing the city's tax base; improved transportation between adjoining districts; and finally, the enhancement of natural features to diversify the city's scenery. Putting these multiple purposes into perspective, Olmsted concluded that "the continued application of the term *park* to an undertaking of the character thus indicated tends to perpepuate an unfortunate delusion, and to invite unjust expectations and criticisms." (Olmsted, 1881). After its completion, The Fens structured subsequent development of adjacent undeveloped land.

In 1881, Olmsted proposed an extension of The Fens. The city had proposed two separate projects; a concrete drainage conduit for the Muddy River and a park nearby. Olmsted proposed that the two projects be combined, and that the Muddy River be transformed into a linear park that would also serve as a storm drainage system. His proposal for the Riverway incorporated a park, sewer improvements, a parkway connecting the center of Boston to its new suburbs, and a public streetcar line. Today The Fens and The Riverway appear like a natural floodplain preserved in the middle of Boston; in fact, they are both artificial creations of the 19th century. Ultimately, the system was extended to link several other park and parkway projects. This was the first municipal park system in the United States, and was known as the "Emerald Necklace" (Fig. 4).

Today the potential exists to link the Emerald Necklace to the waterfront. If the stream valley in the Dudley neighborhood were developed as a linear park and stormwater detention system, its western tip would stretch almost to Franklin Park (the end of the Emerald Necklace) and its eastern end to within reach of the waterfront. The connec-

Fig. 4. Boston. The Emerald Necklace and proposed extension through a linear park developed on vacant lands.

tion could be completed, in part, by existing vacant land outside the Dudley area. Such a project would not only be in keeping with Olmsted's Emerald Necklace, but would extend it.

IMPLICATIONS FOR EDUCATION

A landscape planning curriculum should provide a sound base for students interested in urban landscape planning. The theory and methods apply, and much of the knowledge base is the same, but further specialization is warranted. The concentration of human activities in the city produces a natural environment that is characteristically urban. There is a growing body of literature on urban nature and works that bridge the scientific literature and landscape planning and design (e.g., Spirn, 1984; Hough, 1984).

In addition to this specialized knowledge, there are several issues which a curriculum designed to teach urban landscape planning must address. One relates to the student's understanding of the city's place in nature; another to an understanding of the inner-city population which, in American cities, is multi-racial, multi-ethnic and, frequently, low-income.

Even when students have been exposed to the literature on the urban natural evironment, they often persist in viewing the city as "artificial" and parks as islands of "nature". How can students be encouraged to see the urban landscape as one that is just as "natural" as the suburban or agricultural countryside? In the author's urban open-space studio, students produce a landscape inventory of a particular urban neighborhood. They not only collect and display spatially the type of information that is routinely part of a landscape survey, but also assemble a series of land-use maps, both historic and current,

that illustrate the evolution of the place over time. The insight gained through comparison of the land-use series with the landscape survey (e.g. physiography, topography and drainage) is fundamental to developing the student's understanding of the interaction between natural processes, human purpose and urban form over time, and the appreciation of both rural and urban landscapes as a part of a continuum.

Another educational issue is how to train American students of landscape architecture who are predominately white, middle class, and from suburban and rural environments to understand a low-income, urban neighborhood composed of black, Hispanic, Asian and/or Caucasian residents. The analysis of statistics on population characteristics does little to extend their understanding of the cultural environment. Students in the author's urban open-space studion are therefore required, at the beginning of the course, to spend the weekend alone with a family who lives in the neighborhood for which they will subsequently prepare a landscape plan. The households are chosen so that collectively they represent the cultural diversity of the neighborhood. In this 2-day period, the students participate in the family's activities during the evening and morning, and join their classmates for field-work in the afternoon. The initial field experience is brief, but its impact is great; the students who return at the end of the weekend have fundamentally different perceptions from when they left on the field trip. This early experience is then followed up during the semester by return visits, interviews with, and presentation to, neighborhood residents.

Cities have undergone, and continue to undergo, major landscape change. To guide that change effectively requires a knowledge of the processes, both natural and social, which shape the landscape over time, and an appreciation for the urban landscape as dynamic and evolving. It requires the ability to inventory and analyze complex information, to display that information spatially, and to synthesize it into proposals for beneficial landscape change. It requires the ability to work with a diverse constituency representing different attitudes toward the landscape, some of which appear to conflict or compete. The ability to forge a framework at the regional scale, and to envision the implementation of broad objectives at the scale of a park or a neighborhood, is particularly important in the city, where changes are likely to be incremental rather than sweeping. Urban landscape planners also need to be highly opportunistic; to be able to exploit windows in time and space that may exist for a very brief time (e.g. vacant lands that may be built upon within a decade).

The issues are fundamentally the same as those faced by landscape planners working in non-urban areas. The environmental problems of the city are not only similar in kind to those of the countryside, but are even more exacerbated, and thus at least as worthy of attention, if not more so. Moreover, many rural and urban environmental problems are closely linked and require coordinated solutions. A growing proportion of the world's population now lives in cities; the city continues to be one of the most important human habitats.

Extending the focus of landscape planning to the city will renew a long-standing tradition. Many of the great landscape planners of the past have applied their knowledge to city design: John Evelyn in his proposals for improving the air quality of London in 1661; J.C. Loudon in his open-space plan for Metropolitan London in 1829; Frederick Law Olmsted in his design of urban parks and parkways that served a variety of purposes in support of health, safety and welfare (Spirn, 1985b). Landscape planning has an important, even unique, contribution to make to the design of the city; landscape planners can no longer afford to ignore the city.

REFERENCES

Berry, B.J.L., 1980. The urban problem. In: M. Woodruff (Editor), The Farm and the City: Rivals or Allies? Prentiss-Hall, Englewood Cliffs, NJ, pp. 37–59.

Hough, M., 1984. City and Form and Natural Process. Van Nostrand Reinhold, NY.

Marsh, G.P., 1864. Man and Nature. Harvard University Press, Cambridge, MA.

Olmsted, F.L., 1881.

Spirn, A.W., 1984. The Granite Garden: Urban Nature and Human Design. Basic Books, NY.

Spirn, A.W., 1985a. Reclaiming Common Ground: The Future Shape of Boston. Paper sponsored by the American Institute of Architects, Boston Society of Architects and McGraw-Hill Publications.

Spirn, A.W., 1985b. Urban Nature and Human Design: Renewing the Great Tradition. J. Plann. Educ. Res.

Weddle, A., 1974. Landscape Planning – Aims and Scope of a New Journal. Landscape Plann., 1: 1–5.