

LANDSCAPES AND A CENTER FOR PRESERVATION TECHNOLOGY

If an institution intended to focus on the study and development of technology for preservation problems, such as a Center for Preservation Technology, is eventually established, part of its agenda will be landscape preservation. Like the study and preservation of archaeological sites and historic structures, landscape preservation requires the mutual support and interaction of experts in many disciplines. The center should include specialists from several different disciplines, including but not limited to, agronomy, botany, cultural geography, geography, horticulture, landscape architecture, soil sciences, and zoology.

The following sections suggest some of the landscape problems a multidisciplinary center might tackle.

Intensive Regional Survey of Landscapes

No organization has made an intensive local or regional landscape survey. Yet such a survey, carried out in several well-defined small regions, would have numerous benefits for preservation, as well as local and regional planning efforts. It could:

- serve as a model for identifying historic landscapes in other regions;
- demonstrate the use and value of GIS and other technologies in identifying and surveying significant landscapes;
- assist landscape management and maintenance planning;
- assist natural resource inventory and planning;
- demonstrate the ability of GIS to map the projected alterations in the landscape as a result of a proposed change in land use policies; and
- assist in managing trade-offs with other uses of the landscapes.

In addition, an intensive regional survey would help educate preservationists in learning how to identify, characterize, analyze, evaluate, and manage landscapes.

Such a survey should be multidisciplinary and use all the available tools of landscape survey,

including existing maps and GIS, to investigate a region in detail. The survey should include all major structural elements and archaeological sites, as well as contemporary landscapes and landscape uses. It would serve as a model for identifying historic landscapes and showing how their preservation and management might be integrated with other uses of the landscape.

The State of Maryland, because of its highly varied landscape and its experience with broad-based surveys of historic structures, might prove an excellent place to conduct an intensive regional survey. Box C outlines what such a survey might entail.

Horticultural or Botanical Technologies

Authentic restoration and conservation of historic landscapes depends on the ability to identify, locate, and use plants appropriate to the historical period of interest. Landscape restorers and managers need inventories of plants grown in a region or area at different periods of history, and sources from which those plants may be obtained. In turn, the restored landscapes themselves can become an important repository for historic species and thereby assist the maintenance of biological diversity within the United States. Living history museums and historic farms may also provide the means to save historic plant stock for future generations. Organizations such as Seed Savers and North American Fruit Explorers also assist in this effort, and may be an important source of seeds for historic plant varieties.⁸²

The United States is losing important collections of historic plant materials. Yet we often are not fully aware of which plants growing today in historic landscapes are authentic historic materials. England has met such problems in part by insisting that historic gardens and other historic

⁸²See OTA's background papers entitled *Grassroots Conservation of Biological Diversity in the United States, Background Paper #1, OTA-BP-F-38* (Washington, DC: U.S. Government Printing Office, February 1986); and *Assessing Biological Diversity in the United States: Data Considerations, Background Paper #2, OTA-BP-F-39* (Washington, DC: U.S. Government Printing Office, March 1986), for a discussion of biological diversity.

Box C.—Intensive Survey of Prehistoric and Historic Landscape Resources in Maryland

Since 1961, the Maryland Historical Trust has conducted an organized, directed survey program to locate, identify, record, and protect significant cultural resources throughout the State. As the survey program has matured, the Trust has placed increasing emphasis on intensive, comprehensive regional survey projects and on expanding its survey efforts to include thematic resource types. The State survey program now includes intensive architectural coverage for 20 of the 23 Maryland counties, and archaeological management plans for four of the five major regions in the State.

Thematic studies have included:

- 5-year survey of industrial sites in Baltimore;
- survey and thematic National Register nominations for traditional sailing craft of the Chesapeake Bay;
- pilot study of agricultural buildings in the Tidewater Region; and
- 3-year survey of Maryland's underwater archaeological resources.

Concurrently, the Trust has undertaken a concerted program to develop new research methods, computerized modeling, and remote sensing techniques, which will expand the capabilities of the Trust's overall program and allow increased understanding of the historic landscape. Recently the Trust has completed the development of the Maryland Comprehensive Historic Preservation Plan, which will serve as a blueprint for Maryland's preservation planning and cultural resource management.

These efforts have laid the groundwork for an intensive pilot study of Maryland historic landscapes. Such a study would allow a more comprehensive view of the State's cultural resources and promote links between traditional cultural resource management and environmental planning and management.

A study of historic landscapes should consider several major categories of resource type:

- Natural landforms that reflect significant events in the formation of the present landscape. Particular emphasis should be placed on landforms and resource types that have directly affected prehistoric and historic settlement patterns. For example, an intensive landscapes study could:
 - investigate the linkage between prehistoric settlement patterns and access to lithic sources, environmental transition zones, and favorable soil types and landforms; and
 - study changing patterns of site selection in the historic period, contrasting early colonial preference for elevated sites with later colonial and post-colonial preferences for river terrace sites also used in prehistoric times.
- Designed and cultural landscapes that can be directly linked to conscious efforts to manipulate landforms, plant materials, and the built environment. The following steps could be taken:
 - analyze selected town squares, public spaces, and urban park systems;
 - study selected planned communities such as Roland Park, Perryville, Greenbelt, Columbia;
 - locate and evaluate individual sites with landscape significance, such as David Fairchild's "In the Woods" and the numerous projects by Olmsted and his firm.
- Incidental landscape features that are the result of settlement patterns, agricultural practices, industrial development, transportation systems, and resource exploitation. It would:
 - evaluate a variety of ways in which the railroad influenced settlement patterns and industrial development, possibly with the role of the B&O Railroad in the development of western Maryland for both industry and tourism, resulting in towns as varied as Mt. Savage, and Mountain Lake Park;
 - evaluate other transportation developments, such as the C&D Canal, the suburban street car lines serving Washington and Baltimore, including early black suburbs in Prince George's County, and the construction of key highways such as U.S. Route 1, the Baltimore-Washington Expressway, and Interstate 270.

In order to allow comparison of the study of these categories, an intensive survey should be conducted in study areas that have distinctly different environments. In Maryland, it would be possible to select four such study areas:

1. an Eastern Shore region, to reflect rural agricultural development in the generally flat Chesapeake Tidewater;
2. Baltimore city, to reflect intensive urban development;
3. the Piedmont west of Baltimore, to allow comparison of an upland agricultural and small town environment with the Tidewater; and
4. the western Maryland valley and plateau, to reflect a mixture of agriculture and timber and mineral resource extraction, and transportation exploitation in the Appalachians.

After completion, such a pilot study should develop recommendations for the identification, survey, and evaluation of prehistoric and historic landscape features throughout the United States, as well as the State of Maryland. In addition, the study could also be used for the protection and management of significant landscape resources.

In addition to providing information for effective management of these cultural resources, the results of the study could also be used to educate local residents about the historic importance of such resources. It maybe appropriate to mount an exhibit such as the recent show, *New Jersey Pinelands: Tradition and Environment*, which featured exhibits that demonstrated how the inhabitants of the Pinelands have interacted with the land through history.¹

¹Produced at the New Jersey State Museum, Trenton, NJ.

SOURCE: Maryland Historical Trust.

landscapes be replanted using historic species, even if it means that the landscape managers may have to defer certain plantings because plant stock is unavailable at the time they wish to plant.

Although many species may still remain in private collections, and smaller commercial nurseries, there is inadequate knowledge of what exists, and little control over the disposition of such stock. A center for preservation technology could serve as a central clearinghouse for historical horticultural and botanical information. If the center also maintained a computer-accessible database containing such information, it could also increase the Nation's ability to restore, conserve, and maintain historic landscapes.

It may also be necessary to establish regional arboreta designed specifically to save, nurture, and propagate historic species. Because of the regional nature of plant hardiness and adaptability, such arboretums would have to be regional in scope. Sleepy Hollow Restorations, in New York, has already started searching out and growing historic plants; Monticello, in Virginia, has

opened The Thomas Jefferson Center for Historic Plants in 1987. The Thomas Jefferson Center will build and maintain a collection of historic plants; sell plants; educate the public through publications, interpretive gardens, lectures, and conferences; and study and document the history of plants used in America.⁸³

Clearinghouse for Landscape Preservation Information

The preservation of historic cultural resources, including landscapes, depends substantially on the use of historical records and technical information that exist in a variety of forms and are stored and maintained in many different places. Decisions concerning the restoration and main-

⁸³"Many historic varieties have desirable characteristics such as fragrance, flavor, vigor, or disease resistance, which maybe needed in future plant breeding. The Center is also collecting the species forms from which modern strains have been developed, and choice North American plants, a group of special interest to Jefferson himself."—Monticello Promotional Brochure, 1987.

tenance of historic landscapes are highly dependent on historical maps and landscape plans. The Library of Congress, The National Archives and Records Administration, The National Park Service, The Smithsonian Institution, The National Technical Information Service, and other Federal, State, and local agencies acquire and maintain a wide variety of information on historic landscapes, including information on plant and tree varieties.

Although other agencies are responsible for carrying out research on archival technologies, the staff of a center ought to be familiar with the latest means of storing, maintaining, conserving, and disseminating information. In addition, the center should maintain a central database that lists the primary landscape databases around the world.

The preservation community also needs information on preservation technologies and sources of expertise, delivered expeditiously. One of the most important needs related to technology is for critically evaluated information on the conservation, restoration, and maintenance of historic landscapes. A centrally maintained technical database could provide such information. Among other things, such a database could strengthen communication among preservation professionals and their counterparts in natural science and engineering fields. Here again, it would also be important to create a centralized database that provides listings of specialized databases that might be held elsewhere. Such a database should be made useful and accessible to developers, planners, researchers, and others outside the professional preservation community. To be of greatest use, "it should be made available "online," and routinely updated.

Landscape Management and Maintenance Techniques

Preservation and management decisions are influenced by two broad considerations. First, at the level of the site, structure, or landscape, cultural resource professionals must generally decide how the landscape will be preserved, used, and interpreted to the public *before* beginning

excavation or restoration. At a broader level, managers charged with stewardship of our cultural resources must consider the various goals of preservation and choose appropriate technologies accordingly. Is preservation for future research, for public examination and appreciation, or is it to satisfy certain legal requirements? These considerations will then affect the management of the landscapes and the expenditure of funds.

Restoration of a designed landscape often involves rehabilitation or restoration of existing elements, for example, pruning and rejuvenation of trees and bushes, dredging of ponds, reconstruction of bridges and walks. It is frequently difficult to find workers who are adequately trained to do such work to the standards required in historic settings. Many of these historic skills have been lost. A Center for Preservation Technology could work with other organizations, such as RESTORE, in New York,⁸⁴ to integrate historic skills, which are generally labor-intensive, with new technologies that could reduce the amount of labor required.

For example, the increased use of personal computers and specially designed software could be extremely helpful in improving the quality and quantity of maintenance planning and management. A computerized management plan for a landscape would allow landscape managers to factor in a number of tasks on a cyclical basis. Each different species of tree, shrub, and plant, as well as structures such as bridges, pavilions, and interpretive centers require a different individual treatment or maintenance strategy, but the computer can simplify the complexities of allowing for such differences. It allows computation of needed labor resources based on assumptions about maintenance standards and landscape systems, and provides the capacity to match up such needs with available labor. It also enables managers to develop a schedule for maintenance that takes into account the level of education and skills of the maintenance personnel and could help justify additional training or personnel, if needed.

⁸⁴RESTORE is a New York-based nonprofit organization that provides training for tradespeople in the restoration and maintenance of historic buildings.

Finally, a center could investigate technologies for such problems as reducing erosion and stabilizing landscapes. Erosion, whether it occurs from **overflowing streams, or wave action, the variation in water level of reservoirs, or surface flow over denuded** slopes, is one of the most serious natural threats to landscapes, as well as to archaeological sites. As has been noted elsewhere, "the methods available for archaeological site stabilization differ very little from those which have been used for stream bank maintenance and general erosion control."⁸⁵ Little comparative research has been carried out on the use of such methods. The following materials and methods, among others such as the use of seawalls, have been employed with varying success for site stabilization:⁸⁶

- stone riprap,
- concrete pavement,
- gunite,
- used-tire mattresses,
- groundcover planting,
- driftwood facing,
- sandbags,
- woven fiberglass or woven excelsior matting,
- GEOWEB,
- soil-binding polymers,
- tall-grass meadows, and
- vegetation around underwater sites.

Although many of the above methods would be unsuitable for the long-term preservation of

⁸⁵Robert M. Thorne, "Preservation is a Use . . . Experimental Archaeological Site Stabilization in the Tennessee Valley," *Tennessee Valley Authority Publications in Anthropology* 40, 1985.

⁸⁶*ibid.*; U.S. National Park Service, "Earthworks Management Manual," Mid-Atlantic Regional Office (Philadelphia, PA: May 1987).

certain historic landscape features, the use of temporary methods such as the emplacement of certain forms of woven fabric, the use of tire mattresses, or fencing, might be appropriate in some locations until vegetation growth is resumed.

Public Education

One of the most important functions a Center for Preservation Technology could have is the translation of research results into information the public can comprehend and use. Although nearly all of the effort of a center would be directed toward providing technological support for the professional preservation community, many of the techniques developed would be of general interest and application. A center could include, as part of its publication program, a series that focused on methods of identifying, inventorying, evaluating, conserving, and restoring landscapes. Many of these methods would be of considerable interest to those who manage contemporary landscapes.

For example, a videodisk that presented the restoration of a designed landscape, including discussions of design decisions, organization of paths, shaded areas, historic reference materials, physical features, etc., could be of considerable interest to the public and also teach people how to care for their own properties.

Traveling museum exhibits, television documentaries, and interpretive packages for teachers would serve to educate the public concerning preservation values and impart significant technical information concerning landscapes.