# In Cyberspace, Seeing the Forest for the Trees

PEOPLE ARE RIGHT TO FEAR the negative impact of cyberspace. When we can sit at our home PC's and call up a virtual town square, why should anyone bother to venture into the real-life — or in cyberspeak, the RL — public square? Why should dwindling public resources be used to keep RL streets clean, safe and attractive? Aren't we already close to auctioning off our public squares to private developers with the entertainment know-how to turn them into sanitized Public Square theme parks? Isn't this the tragic destiny post-modern architects are fated to embrace?

But cyberspace could also turn out to be the salvation of some RL places. Like, maybe, the planet Earth. By the end of the year, for example, Internet surfers may be able to dive into their computer screens and come up inside the leafy glade of a virtual forest. It will be a pleasant place for a virtual stroll: an Arcadian vista of trees, flowers, lakes and scampering wildlife.

The developers of this World Wide Web site expect it to be more than a green screen saver for wired techies. It is being designed to offer visitors to the virtual forest an ongo-
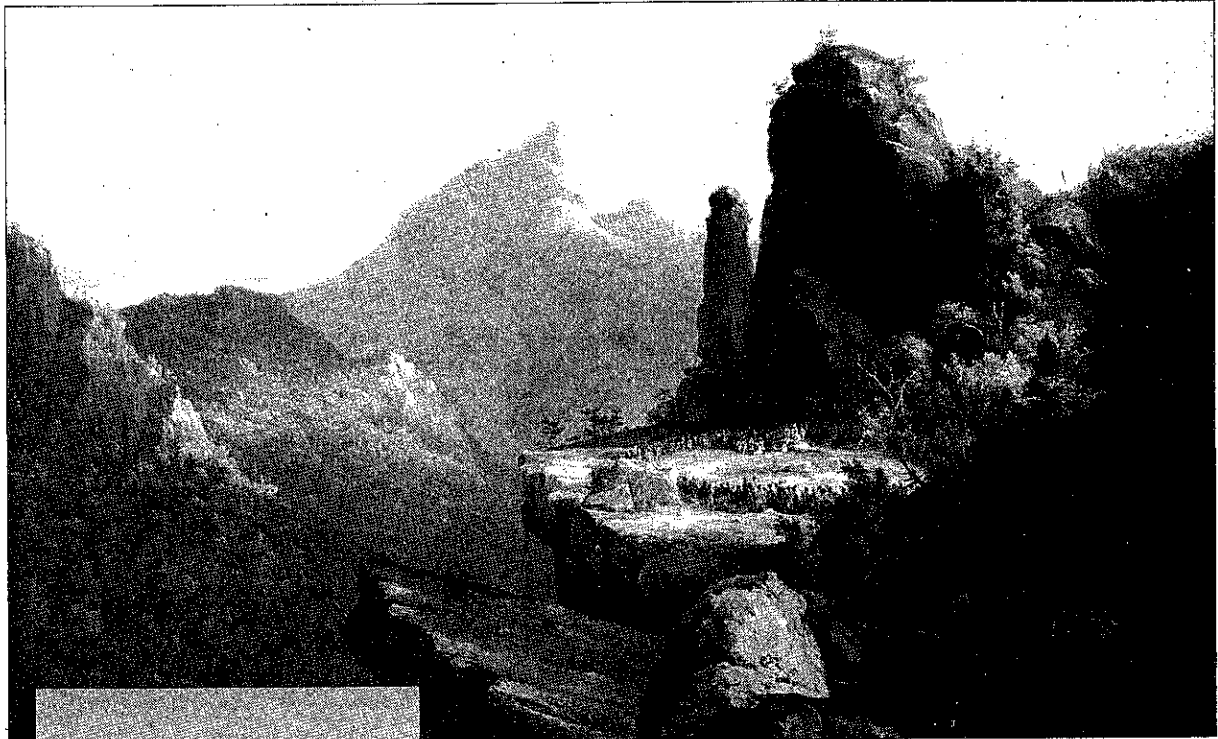
Rethinking the art of making places, on the site where artists of the Hudson River began to define America's cultural identity.

ing real-time report on the ecological status of the RL environment — Black Rock Forest, 40 miles north of New York — based on information collected through a system of environmental monitors.

With a click of the mouse, visitors will be able to look at a tree on the screen, for example, and check the moisture content of the soil in which it grows or the quality of the air in which it stands. Another click will enable them to grasp the connection between soil conditions and the quality of the drinking water that comes out of the taps in Manhattan.

Nature, at this web site, will be presented not solely as an escape from the confinement of urban life but as the ultimate infrastructure on which a city's viability depends.

The Virtual Forest Initiative, a working title, is being developed by Jean Gardner, an educator and environmentalist who is a consultant to the Black Rock Forest Consortium, a group of educational and research institutions. The consortium was established in 1989 to study the ecology of the 3,750-acre Black Rock Forest in Cornwall, N.Y., near West Point. In addition to gathering hard scientific data about the Hudson River watershed, the group hopes to influence public policy on the management of natural resources and to educate the public about its stake in the decisions Government makes on its behalf.

Black Rock Forest and nearby Storm King Mountain are emblematic of the possible consequences of such decisions. In 1963, they were proposed as the site of a Consolidated Edison hydroelectric plant. The 2 million megawatt plant at the base of Storm King would have pumped water from the Hudson River to a mountaintop reservoir set largely on Black Rock Forest, then owned by Harvard University, killing large
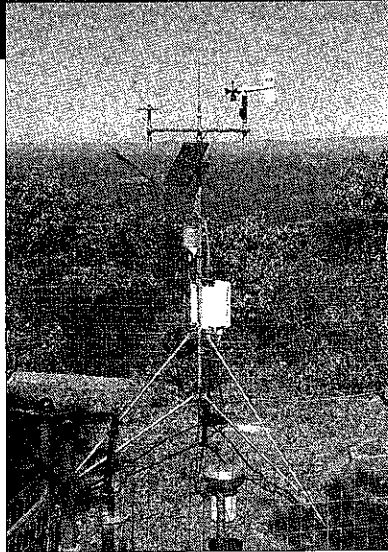
numbers of game fish in the course of drawing and releasing river water.

The Storm King project became the green equivalent of the destruction of Penn Station a decade earlier. The controversy raged for 17 years. Just as the station's demolition galvanized preservationists into action, so Storm King became a national symbol of resistance for environmental groups. The Black Rock Forest Consortium is one result.

The consortium is now in the process of installing a system of environmental sensors throughout the forest and its waterways and developing a digital data base for environmental studies.

Some of the data to be collected — wind direction, barometric pressure, solar radiation — sound no more impressive than the evening weather report. What makes the project significant, however, is the way it proposes to link nature and culture — enabling visitors to the web site to visualize the connections between the look of a tree in a forest and the quality of daily life in a built-up metropolitan region.

A drought, for instance, could become something more than a newspaper headline, or a reason given by public officials for turning off fire hydrants in inner-city playgrounds. It could also become an occasion to rethink public policies. Soil is a natural system of water filtration. If it is eroded, contaminated or built over, a nearby city may be forced to spend billions of dollars on filtration equipment to preserve water quality.

But the story behind this project is not merely about science or government af-

"The Last of the Mohicans," above, painted by Thomas Cole in 1827, and an environmental monitoring station in Black Rock Forest—Two emblems, past and present, of Hudson River schools of thought.

fairs. It is also a cultural story about a movement to rethink the art of making places. The Hudson River Valley was where artists began to define America's cultural identity in terms of our relationship to the land. The Virtual Forest Initiative uses modern technology toward a similar goal, redefining that idea in contemporary terms on the same site.

Jean Gardner began her career as an architectural historian specializing in the work of Frederick Law Olmsted, the designer of Central Park. Like William Morrish and Catherine Brown, who run the Design Center for American Urban Landscape at the University of Minnesota, she is both updating Olmsted's legacy and revising our view of it.

Only a generation ago, the name Olmsted had become mainly a synonym for picturesque landscapes. Today, there is wider recognition that Olmsted's parks were part of a sweeping vision that encompassed infrastructure, urban development, natural ecology and social thought. The Virtual Forest Initiative reunites these elements in contemporary form. The infrastructure is electronic and the trees are virtual, but, like Central Park, the project is strongly rooted in an ethos of public responsibility.

That's where it differs from the Federal project now under way to convert Cold War spy satellites into stations that will monitor the environment on a global scale: the public will have no access to data gathered by the satellites. Officials of that program say disclosure could compromise national security. Perhaps they fear how the public would react to more bad news about the ozone layer. Whatever the reason, the Government

project treats science as a covert C.I.A. operation.

Ms. Gardner's main mission is public education. A major part of her job is to devise curriculums for elementary and high school students who will be visiting the Black Rock web site in science classes. They will use "the visualizer," software now under development, to track the impact of New York's fluctuating levels of air pollution on the water, soil and vegetation in Black Rock Forest.

USING THE INTERNET IS AN important education in itself, Ms. Gardner believes. She considers cyberspace a new form of space, not just a fancy metaphor for interconnected computers. Cyberspace, she says, is comparable to the space Brunelleschi opened up in the 15th century by formulating the laws of linear perspective. Perspectival space fixes the viewer in one place. In cyberspace, people can experience two or more places in real time simultaneously, depending on how many windows are open on the computer screen.

Ms. Gardner hopes that this experience will make people more attuned to the way ecosystems work. She says people tend think that environmental events occur in a linear sequence, like a five-day weather forecast. Today, sunshine; tomorrow, snow. In fact, an ecosystem is a complex of events that occur simultaneously and often interact. In this sense at least, the earth itself resembles cyberspace, an RL worldwide web.