Science in Culture

From art to environment

Betty Beaumont's *Ocean Landmark* is in deep water.

Martin Kemp

Artists have long made large-scale interventions in the landscape. My house in Woodstock in Oxfordshire overlooks Blenheim Park, in which a magnificent landscape with a lake, a palladian bridge, rolling hills and clumped trees was sculpted in the 1760s by Lancelot 'Capability' Brown. Reshaping the land in this way requires patience: the scene progressively matures as the trees grow to full majesty and the ecology of the new topography organizes itself. More recently, 'land art' has involved the construction of huge artworks in specific locations, most notably the great *Spiral Jetty* constructed in 1970 by Robert Smithson at Rozel Point on the Great Salt Lake, Utah.

Betty Beaumont, an artist born in Toronto, Canada, but based in New York, follows this tradition of reshaping landscapes, but with key differences. Her interventions are directed specifically at social awareness, setting up environmental processes over long periods of time, rather than making monuments to be viewed in the time-honoured way. Indeed, the grandest of her long-term projects, *Ocean Landmark*, now almost 25 years old, cannot be readily viewed, as it lies deep in ocean water.

In 1978, Beaumont started work with a team of scientists to transform processed coal waste from a hydroelectric power plant in Ohio into inert rectangular blocks. Some 500 tons of the coal fly-ash blocks, 17,000 in number and cast at a concrete plant in Pennsylvania, were transported by barge in 1980 to a site on the continental shelf in the Atlantic Ocean, 40 miles from New York Harbor and 3 miles off Fire Island National Seashore. They were deposited on the sea floor to form a large mound.

Over the years, the austere blocks have been transformed into a lush reef, a rich ecosystem teeming with fish. Such has been the success of the project that it is listed as a 'fish haven' by the National Oceanographic and Atmospheric Administration.

Beaumont is fascinated by two time frames. The first consists of the ancient laying down of coal, the modern generation of power and the simultaneous production of waste. She completed the cycle with her team: "We took this material, transformed it and put it on the bottom of the sea at a planned depth so that life could develop, and it has sprouted an ecology that supports life, including plant life."

But is it successful as a work of art? If we are to define it as such, we have to stretch our definitions. She explains: "*Ocean Landmark* is an interdisciplinary work that at the time could only be described through other practices. It is known beyond an

'idea' as a real artwork. Although this artwork cannot be seen, each of us can visualize it."

Beaumont uses various strategies to meet our desire to see her work. One method, shown here, is to create a pile of scaled-down blocks as a surrogate for the underwater reef, but without, of course, the ecological accretions. Other strategies involve the sort of multimedia displays that natural-history museums use to portray aspects of nature.

Beaumont explains: "Current technology enables me to image this work in its life-giving, mature condition and in its entire form. Using global positioning satellite technology, the work can be located and images created through the use of underwater remote sensing and side-scan sonar. Coded in the images of the now-evolved underwater sculp-

ture will be its progression as a sustaining environment for marine life and a thriving ecosystem."

Walking on the bank by Capability Brown's lake in Blenheim Park, I watch a pair of great crested grebe carrying fidgety chicks on their backs. Clearly Brown knew how to create bodies of water that were ecologically viable, although his main purpose was to delight the Duke and Duchess of Marlborough. In our era, Betty Beaumont takes this one step further, making viability the prime purpose of her art.

Beaumont's work is on show in the exhibition *Anima Mundi: Soul of the World* at the Herbst International Exhibition Hall, The Presidio of San Francisco, throughout October.

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30 years before. More oddly, the authors approvingly discuss the scientific contributions of Maurice Ewing and Bruce Heezen of Columbia University, both of whom opposed plate tectonics, yet make no mention of Hess, a principal architect of the theory and the man most responsible for reopening the debate in the United States.

Small errors are most relevant when they add up to a big problem, and the big problem here is the underlying theme of the book. Encapsulated by its subtitle, the suggestion is that the New Madrid quakes helped to launch the specialism of seismology, perhaps

even the whole science of geology. The authors claim, for example, that geology in the early nineteenth century was "in its infancy"; that "most people who thought of themselves as scientists still believed generally in the history of the world as specified in the book of Genesis"; that many (if not most) geologists accepted the chronology of Archbishop Ussher that Earth was created on 23 October 4004 BC; and that Charles Lyell was the founder of modern geology.

These claims represent views that have long been discredited by professional historians. By 1811 there were well developed

empirical and theoretical frameworks for the Earth sciences, developed primarily in continental Europe but rapidly making their mark in Britain and the United States as well. Conversely, seismology had its early roots primarily in Italy, but developed as an organized scientific discipline in the late nineteenth century in Japan, India and Germany. In Japan, the constant threat of severe earthquakes in a densely populated country hemmed in by the sea provided strong motivation; in India, Richard Dixon Oldham's study of Indian quakes led to his discovery of P and S waves; and in Germany,