Submerged Cultural Landscapes

by Joe Flatman and Mark Staniforth

Indigenous populations around the world have made extensive use of the coastal zone for tens of thousands of years. Rising sea-levels since the Last Glacial Maximum (LGM) have seen vast areas of what were once terrestrial cultural landscapes turned into submerged (or underwater) cultural landscapes. Inundated terrestrial archaeological sites, however, can result from a number of other natural processes as well as rising sea-levels including earthquakes (such as Port Royal) and volcanoes. Human activity can also result in archaeological sites becoming submerged such as the inundation of sites by reservoir (or dam) construction. Large scale dam construction in the USA during the twentieth century resulted in the inundation of many indigenous archaeological sites causing the US National Parks Service to conduct the Reservoir Inundation Studies Project during the 1970s (Delgado 1997: 291-292; May et al 1978). This paper will consider some of the submerged cultural landscape studies conducted to date and outline the potential for this type of research to be conducted in South Australia.

It is possible to sub-divide submerged cultural landscapes into three major groups on the basis of both material remains and cause of inundation:

[a] ‘Prehistoric’ (pre-8000 BP) - including environmental remains (such as fossilised forests, peat beds, etc.), associated to the early, long-term, human occupation of landscapes usually rendered submerged through very long-term (‘deep-time’) processes of environmental change, including: [a] eustatic sea-level rise; [b] regional or local tectonic activity; [c] isostatic (land) uplift; [d] sediment deposition and infilling; [e] long- and short-term climatic change. A distinctive characteristic of such sites is large percentage of non-cultural data, including ‘geological’ data such as strata, and climatological and environmental data such as floral and faunal remains recovered using techniques such as coring.

[b] ‘Ancient’ (8000-1000 BP) – including major cultural remains associated to the global rise of ancient city-states capable of large-scale sedentary activity, usually rendered submerged through medium-term processes of change including: [a] regional or local tectonic activity; [b] sediment deposition and infilling; [c] long- and short-term climatic change. A distinctive characteristic of such sites is a diverse array of cultural material associated with early attempts by humans to ‘manage’ and manipulate the coastal zone on a large-scale.

[c] ‘Historic’ (1000 BP – Present) – including cultural often compatible with ‘historic’ (i.e. documentary, iconographic, oral) evidence, usually rendered submerged through short-term processes of change, including [a] regional or local tectonic activity; [b] sediment deposition and infilling; [c] long- and short-term climatic change, particularly dramatic short-term incidents like tsunami, tidal-waves, etc.; [d] culturally-driven change, such as war or economic developments like the construction of dams or artificial lakes. A distinctive characteristic of some sites is the variation between those sites deliberately (culturally) submerged and stripped of most material culture prior to inundation, and those sites accidentally (naturally) submerged – usually as a result of dramatic short-term incidents – and not stripped of most material culture.
Until WW2, the analysis of submerged cultural landscapes remained extremely small-scale and informal. Although a number of sites had been identified, there was no formalised research methodology, and all research was driven by lone individuals or small teams. Access to sites also proved problematic. After WW2, studies of submerged cultural landscapes became increasingly international in scope, and with the development of ‘SCUBA’, access became vastly easier. However, the development of SCUBA and the rise of ‘maritime archaeology’ as a sub-discipline of archaeology, although broadly beneficial to submerged cultural landscape studies, meant that such sites fell out of the public eye to be replaced with superficially more appealing shipwreck sites. To some extent, this problem persists to this day, with ‘maritime’ ‘marine’ and ‘underwater’ archaeology all being grouped in the public – and often uninformed intellectual – consensus as being devoted entirely to shipwreck sites, rather than a diverse array of cultural materials that includes submerged cultural landscapes. Although there is growing awareness of the unique value and survival of submerged cultural landscapes, therefore, much remains to be done to ‘level the playing field’ and give this area of research the full respect it deserves.

**Issues in submerged cultural landscape studies**

One of the "big issues" in indigenous archaeology in places like the Americas or Australia involves settlement (Dixon 1999; Dillehay 2000; Koppel 2003). Questions of where and how people first arrived, how they spread across the land and how they changed it from a "natural" landscape into a "cultural" landscape. For example, for many years it was thought that people travelled into Western North America across a land bridge in the Bering Strait and then migrating south through an ice-free passage between two vast areas of glacier. Coastal migration theory has suggested, and recent archaeological research has clearly demonstrated, that people probably travelled along the coastlines, frequently by water, and that some of the archaeological evidence has been submerged by rising sea-levels. Despite the difficulties of locating Indigenous sites underwater, artefact assemblages dating from 400 to at least 7000 years B.P. including stone tools and even a nearly complete antler harpoon point, have been found on inundated terrestrial sites such as at Montague Harbour in British Columbia, Canada and at Corral Beach in Los Angeles County, California (Delgado 1997:282-283; Muche 1978). More than thirty years of underwater research in Florida has demonstrated the potential for well preserved archaeological evidence to survive for more than 10,000 years at sites like Warm Mineral Springs and Little Salt Springs (Murphy 1978: Delgado 1997: 243-244 & 480-481) In Australia it has long been recognised that the first places settled by human beings in this region are now located underwater. In the 1980s, for example, Nic Flemming attempted to search for terrestrial archaeological sites underwater in the Arafura Sea (Flemming 1982). Subsequently Charles Dortch at the WA Museum has investigated prehistoric sites in freshwater sites such as at Lake Jasper and considered the potential of Indigenous sites in the sea (Dortch et al 1990; Dortch 1997). South Australia has a number of ideal locations for locating and investigation of submerged cultural landscapes in particular the palaeo-landscape of the Backstairs Passage area between Kangaroo Island and the mainland where drowned river valleys offer excellent archaeological potential.

A series of questions exist for the future of submerged cultural landscape studies. As the fossil fuel crisis worsens in the next 20-50 years, new areas of the world’s seabed are likely to be explored for their oil- and gas-bearing potential. The SE Asian region and particularly the
Australian continental shelf is a prime area for such development, given the known existence of oil-bearing deep-level strata in this region. The exploration of such sites would have a profound impact on both the rate of discovery and management environment of submerged cultural landscapes. Simultaneous to this, the continuing expansion of the global population not only creates an ever larger demand for fossil fuels, but also for land and for resources such as fish and marine aggregates, and associated developments like the dredging of deep-water channels for ships, land-reclamation, etc. These are also likely to increase the rate of discovery of submerged cultural landscapes, often in areas of the world least able to manage and protect their submerged cultural remains. Developments on land, such as deforestation, also contribute to this problem, leading to siltation and pollution, which can bury, obscure or destroy such fragile remains. Meanwhile, in locations such as Australia, Indigenous Communities have yet to be properly consulted on their feelings about the discovery – accidental or otherwise – of such sites, and how such sites should be ‘managed’ as, arguably, the traditional ‘owners’ of such sites. Elsewhere in the world, particularly in NW Europe, the continuing impact of eustatic and isostatic change should not be discounted, with sites now on land becoming submerged and vice-versa. Such long-term change is exasperated by the impact of global warming, which appears to be having an appreciable impact on the climate of NW Europe, particularly the frequency and ferocity of winter storms, leading both to inundation and enhanced coastal erosion. The presence of large-scale flood-defence systems such as the Thames Barrier in London is an example of how seriously this impact is being taken. The unstable global geopolitical climate also means that such structures are at serious threat of terrorist attack; if successful, an attack on the Thames Barrier when raised would have an incalculable human toll, leaving aside the question of damage to material remains, both ancient and modern.

The really exciting changes at the start of the twenty-first century are the developments in marine geophysics and manned submersibles as well as unmanned Remote Operated Vehicle (ROV) and Autonomous Underwater Vehicle (AUV) technology. As this technology becomes cheaper, easier to operate and is able to conduct different operations underwater then the possibilities of locating and excavating Indigenous archaeological sites underwater have increased dramatically. At present the Australian National University is developing AUV systems which are expected to provide cheap and reliable seabed survey information and Flinders University is considering being a part of a consortium of research institutions involved in the purchase and operation of a new $2 million submersible. This new technology is expected to provide access to sites which have been inaccessible in the past and to expand our understandings of submerged cultural landscapes in Australia.
References


