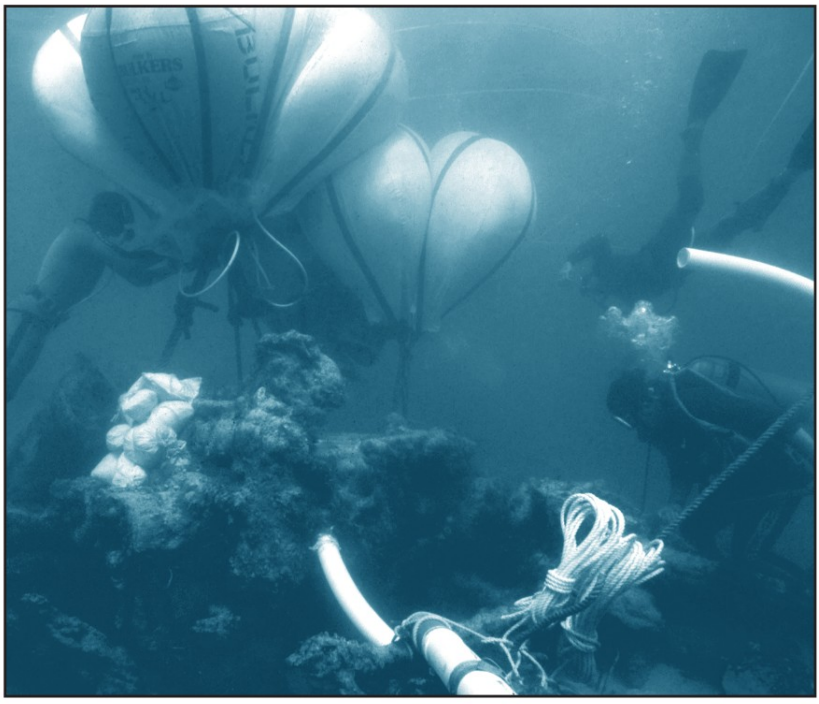
The Plenum Series in Underwater Archaeology

MARITIME ARCHAEOLOGY

Australian Approaches



Edited by
Mark Staniforth and Michael Nash

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Maritime Archaeology
Australian Approaches

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Maritime Archaeology
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To our wives Paddy O'Toole and Joanne Nash, without whose love and forebearance this book would not have been completed.

For Michael Hyde—a friend and colleague—who edited *Maritime Archaeology in Australia: A Reader* which was the forerunner to this book.

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Preface

Maritime archaeology in Australasia has a long and proud tradition based firmly on the excellent, pioneering work of the Department of Maritime Archaeology at the Western Australian Maritime Museum over more than thirty years. Based on comprehensive national historic shipwreck legislation, the past twenty years or so has seen the development of strong and viable programs in other places and across a variety of organizations from cultural heritage agencies and National Parks Services to museums, universities and consultancy companies. Australian maritime archaeologists not only work in Australia but also have regularly undertaken projects in collaboration with archaeologists, cultural heritage managers, museums and avocational groups throughout the Asia-Pacific region. Australian maritime archaeologists have also taken leading roles in the development of international guidelines such as the ICOMOS and UNESCO *Convention on the Protection of the Underwater Cultural Heritage.*

Despite the prodigious quantity and range of studies that have been carried out by Australian maritime archaeologists there have been very few attempts to present this work in a comprehensive fashion. In 1986 Graeme Henderson of the Western Australian Maritime Museum published *Maritime Archaeology in Australia*, which summarised developments up to that date. Since then there has been a broad expansion of maritime programs and a corresponding increase in the publication of reports through the Australasian Institute for Maritime Archaeology and other national and international journals. A number of the more significant of these articles were reprinted in 2000 as *Maritime Archaeology in Australia: A Reader* (Staniforth and Hyde, 2001). The thematic approach of the *Reader*, intended mainly as a ready reference for students studying maritime archaeology, has been adopted for this current publication.

The thirteen chapters provide an introduction to a series of themes, issues and approaches to Australian maritime archaeology as it has been conducted over the past 20 years, including the development of cultural resource management programs, the expansion of current research beyond particularistic shipwreck studies and the development of a 'holistic' approach to a wide range of maritime related sites. Clearly, there is insufficient space to provide more than an overview of each topic and readers are urged to turn to the wide range of books, monographs and special publications referred to in the bibliography.

There is also very little in this book on search, survey and excavation methodology as there are a number of very good 'how to' publications on the subject (see Dean et al., 1992; Green, 2004). It is considered that many of the techniques employed in maritime archaeology have become reasonably standardised and well known throughout the world.

Over the years there has been a perception, rightly or wrongly, that maritime archaeology has been controlled by those practitioners who work for State government agencies – the State delegated authority in each Australian state or territory. The reality has always been more complex and recent developments have more explicitly demonstrated this complexity. There are increasing numbers of maritime archaeologists who are now making their careers outside the government agencies in consulting work and in the university sector, and this book includes contributions from a range of people who work in these various sectors. This book is also an attempt to allow the presentation of a variety of views from across the generations from senior figures who have been involved since the 1970s to the mid-career professionals and a number of the more recent graduates. Although the generations may be represented, the gender balance remains decidedly unequal with only two female maritime archaeologists involved in writing for this book and this is an issue that Australian maritime archaeologists need to address.

Acknowledgements

We would like to thank in the individual authors of each chapter of this book. It was a long time coming but hopefully you will find it was worthwhile in the end.

Thanks also to those who provided images for this book: in particular David Nutley, Patrick Baker, Peter Harvey, Ross Anderson and Cassandra Philippou.

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Abbreviations

Advisory Council on Underwater Archaeology (ACUA)
Australasian Institute for Maritime Archaeology (AIMA)
Australian Historic Shipwrecks Database (AHSD)
Australian Museums On-Line Database (AMOL)
Australian National Maritime Museum (ANMM)
Australian Netherlands Agreement on Old Dutch Shipwrecks (ANCODS)
Archaeology of Whaling in Southern Australia and New Zealand (AWSANZ)
Convention on the Protection of the Underwater Cultural Heritage (CPUCH)
Department of Arts and Administrative Services (DAAS)
Environment Protection and Biodiversity Conservation Act (EPBC)
Federation of Australian Underwater Instructors (FAUI)
Joint Standing Committee on Treaties (JSCOT)
Historic Shipwrecks Act (HSA)
International Congress of Maritime Museums (ICMM)
International Council of Museums (ICOM)
International Charter for the Conservation and Restoration of Monuments and Sites (ICOMOS)
International Convention on the Underwater Cultural Heritage (ICUCH)
Maritime Archaeological Association of New South Wales (MAANSW)
Maritime Archaeological Association of Queensland (MAAQ)
Maritime Archaeological Association of Tasmania (MAAT)
Maritime Archaeological Association of Victoria (MAAV)
Maritime Archaeological Association of Western Australia (MAAWA)
Museum of Tropical Queensland (MTQ)
National Historic Shipwrecks Database (NHSD)
Nautical Archaeology Society (NAS)
Rhode Island Marine Archaeology Project (RIMAP)
South Australian Maritime Museum (SAMM)
Self Contained Underwater Breathing Apparatus (SCUBA)
Society of Professional Archaeologists (SOPA)
Surface Supplied Breathing Apparatus (SSBA)
Society for Underwater Historical Research (SUHR)
United Nations Educational, Scientific and Cultural Organisation (UNESCO)
Victoria Archaeological Survey (VAS)
Veeringde Oost Indische Company (VOC)
Western Australian Maritime Museum (WAMM)

Contents

Chapter 1

Maritime Archaeology in Australasia: Reviews and Overviews

Michael McCarthy

1.1. INTRODUCTION

In the late 1970s the noted British underwater archaeologist Keith Muckelroy, stated that maritime archaeology was the "scientific study" of the material remains of humans and their activities in, on and around the sea (1978:4). In essence, maritime archaeology can be seen as the archaeological investigation of any coastal or shore–based society.

Australia was initially settled via the sea by both Aboriginal and European cultures and the majority of the current population still remain near the coast. Thus the maritime trades became some of the most important early industries. The Indigenous trade in pearl shell, for example, stretched from the Kimberley coast into the deserts and later outwards across the sea, carried by Macassan traders from the Indonesian archipelago. During the colonial period, boat and shipbuilding for the exploitation of whales, seals and sandalwood helped transform Sydney and Hobart from introspective penal colonies into thriving economic centres. As other colonies and immigrant population centres developed on land, water-borne transport by sea and river was initially the glue that held them together, both socially and economically (Broeze, 1998). To fully comprehend the development of these coastal societies over the ages, an understanding of their interaction with the sea became critical. In this way, maritime archaeology, as defined by Muckelroy, has become an essential tool in the examination of the lives of those inhabiting the shores of the Australian island-continent as well as in the Australasia region.

1.2. MARITIME ARCHAEOLOGY IN AUSTRALIA

Maritime archaeology in Australia was initially museum-based, primarily because the mid-1960s discovery of five bullion-carrying East India ships off the Western Australian coast forced authorities to turn to the nearest state museum (the Western Australian Museum) for their protection. At the time only the fabled *General Grant* (1866) in New Zealand, the elusive "Mahogany Ship"—reputedly a manifestation of a Portuguese or Chinese landing—and the mythical pirate treasures of Victoria, excited the public imagination to the same degree. Recreational diving was in its infancy and the undersea realm was a source of wonder, excitement and interest. Thus, the 1969 amendments to the Western Australian *Museum Act* and the recruitment of staff to act as "site police" heralded the first attempts to protect (and manage) maritime archaeological sites in Australasia. These initiatives were also manifestations of a broad-based public, political and academic desire to preserve and present the wrecks and their relics.

Concerns grew in the late 1960s as the extent of the archaeological deposits at the East India wrecks became better known and Museum staff had difficulty coping with the spate of looting that occurred. Despite attempts to shift site investigations and management to the University of Western Australia (Tyler, 1970), and in the absence of suitably experienced Australian candidates, the Western Australian Museum looked towards Europe. In 1971 the Museum secured the services of Oxford graduate, Jeremy Green. Green who was a protégé of Teddy Hall, the inventor of the magnetometer, and a colleague of Keith Muckelroy. The employment of overseas talent was a common feature in many disciplines in Australia at that time, including archaeology.

Green's scientific background and his focus on the East India ships was complemented by the interests of staff member Graeme Henderson who enrolled in a Masters course in maritime history at the University of Western Australia and by those of staff member Scott Sledge, another graduate in history. These influences served to broaden the scope of the Department's work into colonial maritime history, shipping practices, and the transition from sail and wood to iron and steam (Henderson, 1977; Sledge, 1978). All these developments were conducted under the guidance of an Advisory Committee which was comprised of representatives of the academic and diving communities advising the Museum Director on the way forward in the new field.

In 1973, the Western Australian *Maritime Archaeology Act* was passed, allowing for the protection of all wrecks lost before 1900 and encompassing the existing *Australian Netherlands Committee on Old Dutch Shipwrecks Agreement.* This provided a legal and logistical framework for the joint operations of the State of Western Australia, and the Dutch and Australian governments with respect to the Dutch East India Company vessels. Members of ANCODS (Australian Netherlands Committee on Old Dutch Shipwrecks) included overseas archaeologists and Australian university-based historians Geoffrey Bolton and John Bach, both leaders in their field (Green et al., 1998). Australia as a nation had come to have its first institutionalized stake in historic

shipwrecks, albeit by virtue of a State Act. A legal challenge to this same Act saw the Federal government develop the *Historic Shipwrecks Act* in 1976, which became a significant milestone for shipwreck management in Australia.

Figure 1.1. Geoff Kimpton with astrolabe from the *Vergulde Draek* site in Western Australia (photo courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

In this same formative period, the Maritime Archaeological Association of Western Australia (MAAWA) emerged, as a group of recreational divers with an interest in wrecks and relics. They began to assist the WA Museum in conducting research, searches and site inspections and in developing shipwreck databases. Independent of any parent unit, the Society for Underwater Historical Research (SUHR) in South Australia had also been formed by this time and undertook some important studies of shipwreck sites and port-related structures (Drew, 1983; Marfleet, 1983). Similar volunteer organizations developed in other states and some of these groups conducted excavations and detailed surveys for the state heritage organizations, such as work on the SS *John Penn*, *Day Dawn* (see Figures 1.2 and 1.3) and *Sydney Cove* (McCarthy, 1980; Atherton, 1983; Lorimer, 1988). Many "avocational" archaeologists as they are now referred to, became justifiably recognized for their skill and commitment and many came to make lasting contributions to the field. One example is John Riley's work on iron and steamship disintegration, based largely on his experiences on deep-water wrecks in New South Wales, that provided the basis for iron and steamship studies in the Australasian region (Riley, 1988a).

Concern over uncontrolled looting of historic shipwrecks was an important impetus for avocational organizations. Empowered as the "voice" of the people, they successfully lobbied various state governments to create their own historic shipwreck legislation and management agencies. By the early 1980s other Australian States and Territories had passed, or were in the process of passing, their own maritime heritage legislation, most of which mirrored the Commonwealth Act. They also developed "shipwreck units" and formed advisory committees to assist in decision-making. In order to provide the necessary staff for these agencies the Western Australian Maritime Museum (WAMM) and the Western Australian Institute of Technology (now Curtin University) developed a postgraduate course in maritime archaeology. This was run on an occasional basis from the early 1980s until the mid-1990s.

Figure 1.2. The shipwreck of the former whaler *Day Dawn* (1888) was lifted and moved using a barge, to protect it from being damaged during a Royal Australian Navy harbour redevelopment (photo courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

In 1978 Keith Muckelroy had observed that the primary object of study for maritime archaeology is people "and not the ships, cargoes, fittings or instruments with which the researcher is immediately confronted" (1978:4). The importance of this definition, however, was not fully appreciated by those enrolled in the early maritime archaeology courses as the majority had no prior archaeological training and had little or no prior exposure to archaeological theory. In this respect, the American publication of *Shipwreck Anthropology* (Gould, 1983) became the catalyst for philosophical change in the Australian

discipline. The papers in *Shipwreck Anthropology* questioned existing research approaches and called for a broader theoretical base to shipwreck studies – arguing for a better use of what was increasingly being perceived as a diminishing archaeological resource. Some of these approaches were quickly taken up in Australia (Effenberger, 1987; Nash, 1987). The latter point, in particular, was echoed by one of the leading Australian practitioners at the time, effectively ending his own "area excavation" style as a *bona fide* site management strategy (Henderson, 1986:171). Armed with these new insights, course graduates from Western Australia came to be employed in either State museums or heritage management agencies dealing with underwater sites. In keeping with the movement towards non-disturbance "cultural resource management" (CRM), limited excavation and the gathering of data by surface recovery, sampling methods and historical research, became the preferred means of dealing with shipwreck sites by the late 1980s and early 1990s.

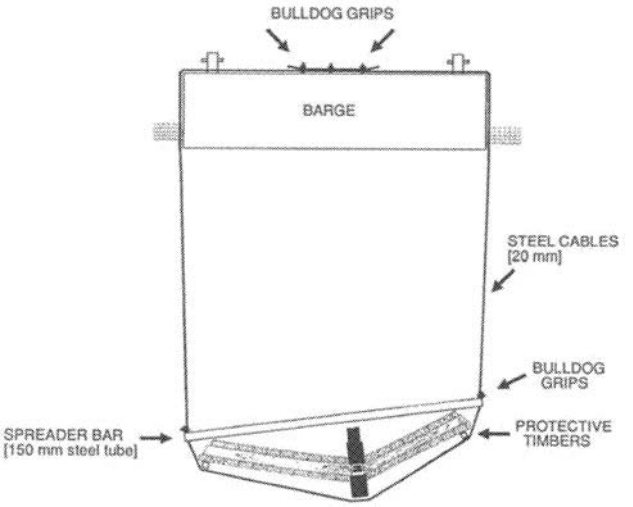

Figure 1.3 Cross-section drawing of the barge and lifting equipment used to lift and move the *Day Dawn* shipwreck. (image courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

Archaeological units across Australia also came to espouse the notion of the "underwater display case". Public access to sites, data and collections was seen as an adjunct to exhibitions (see Figure 1.2), in-house archaeological reports and peer-reviewed articles. All had tangible educational, academic, recreational and tourism-based outcomes and generated considerable public support. Since 1976, the Commonwealth Government has supported these works through the Historic Shipwrecks Program, annually distributing project funding

to the States and Territories (see Chapter 10). For their part, the States and Territories provide the bulk of actual costs including infrastructure, buildings, facilities, salaries, etc. Outside this framework, maritime archaeologists are employed by the Australian National Maritime Museum (ANMM), often conducting work in conjunction with colleagues elsewhere in Australasia and overseas. This direct State and Federal Government involvement in the protection of Australia's shipwrecks has resulted in the profession being relatively well-funded compared to other archaeological disciplines.

REVIEWS AND OVERVIEWS

In 1988 Graham Connah was calling on his terrestrial colleagues throughout Australia to join him in the scientific investigation of what he termed the "material remains of the recent past" (1988:4). Despite the obvious parallels between historical and maritime archaeology the links between the disciplines were few at the time. In 1990 Jeremy Green still felt the need to explain the reasons why maritime archaeology was slow to become accepted amongst terrestrial archaeologists when he published *Maritime Archaeology: A Technical Handbook.* He believed that there remained a need to "build up a clear understanding of the material before constructing the deeper hypotheses" and before proceeding further (Green, 1990:235). This plea for a better understanding of the material culture before launching into "shipwreck anthropology" was a view shared by Green's colleague George Bass, who worked in the Mediterranean, and probably by Keith Muckelroy himself (Bass, 1983). However, shipwreck anthropology did come to provide an alternative philosophical base for those wanting to build upon the traditional foundations of Australasian maritime archaeology.

Green highlighted the cause of the problem when he stated that the field in Australasia "suffers from a lack of respectability", due he believed, due to "a lack of a proper qualification and accreditation system in the field" (1990:263). These sentiments were also reflected in a paper published by maritime archaeologist Kieran Hosty and his terrestrial archaeology colleague Ian Stuart in *Australian Archaeology* in 1994 (Hosty and Stuart, 1994). There, references were made about isolation, inadequate university representation, weak research and management strategies, and the lack of interdisciplinary exchange within the field. These were certainly justified, though at the time there were both specific examples to the contrary and a general undercurrent of change was evident as the discipline matured during the mid to late 1990s (McCarthy, 1998a).

One significant change in that period was the advent of a more theoretically aware intake of students into the 1996 Curtin University course, many of whom were graduates of terrestrial archaeology courses. The same year also saw the growth of full-time university-based maritime archaeology. This initiative was partly driven by a perceived need for a larger critical mass of

practitioners performing diverse tasks, working on a much broader spectrum of research and applying for a much broader range of funds (Staniforth, 2000a). Allied to this was a call for the expansion of public education programs through the AIMA/NAS courses. This is now manifested in a burgeoning AIMA/NAS training program and a diverse set of undergraduate and postgraduate courses in maritime archaeology at Flinders University (South Australia) and James Cook University (Queensland).

These developments have served to extend the theoretical base of Australian maritime archaeology beyond the earlier technically-focussed course in Western Australia. In effect, the three courses complemented each other, providing a much-needed diversity in practical maritime archaeological training and theory in the wake of the leading movements of the 1980s. That these institutions have now conducted field schools in association with site management agencies in most Australian States attests to their relevance and usefulness. More recently the reintroduction of postgraduate courses in Western Australia through the University of Western Australia is another positive step, serving to further strengthen the discipline.

Over the last decade the boundaries that once defined the "underwater" or "terrestrial" spheres within Australian archaeology have become increasingly blurred. Although this has occurred to a limited degree in prehistory with the study of inundated Indigenous sites still in its infancy (see Dortch, 1991, 1997a, 2002a), it is most readily apparent in the sub-disciplines of historical and industrial archaeology. These cover the period of maritime exploration and the European settlement of the continent. It has also become increasingly apparent that terrestrial and underwater sites from this period have "more similarities than differences" (Nash, 2004:7). These include common temporal settings, corresponding cultures and material remains. Both also use documentary evidence as a complementary and potentially conflicting research tool. What really separates the two are a different set of site formation processes, the technical elements of the work, an emphasis on the boat or ship as a carrier and the short site deposition period of most maritime archaeological sites. This is the oft-quoted "time capsule" analogy.

The interlinking of historical, industrial and maritime archaeology in Australasia is manifest in a number of recent developments. Firstly, since 1995 there has been a trend towards joint conferences. The combined 1995 Australian Institute for Maritime Archaeology and Australian Society for Historical Archaeology conference in Hobart, for example, had the publicly-stated aim "to cross the boundaries of the two disciplines". Secondly, there has been a marked tendency to publish outside each specific sub-discipline in a much wider group of journals. This has resulted in a much broader readership and a far wider appreciation of the potentially complementary nature of terrestrial and maritime archaeology. In *Archaeology of Whaling in Southern Australia and New Zealand*, for example, the authors effectively redefined the essential and mutually-beneficial nature of cooperative research (Lawrence and Staniforth, 1998). An example of the manner in which this lead was followed is evident in a

number of subsequent benchmark studies on shore-based whaling (Gibbs, 1996, Lawrence, 1998, 2001a; Nash, 2003b).

The facilitation of broader interdisciplinary links has been a feature of shipwreck programs in Australia for many years. Over the life of long and complex projects such as *Batavia*, *Pandora,* SS *City of Launceston* and *Sydney Cove*, archaeological techniques and philosophies have changed considerably (see Figure 1.3). All of these projects utilized a wide variety of archaeological, scientific and technological expertise and have seen the gradual acceptance of maritime archaeology within terrestrial archaeological circles. Nevertheless it was the SS *Xantho* project that crossed one of the last bridges between traditional maritime archaeology and the mainstream when it addressed anthropological questions about the behavior of the vessel's owners and operators (Veth and McCarthy, 1999). A number of similar studies have now been completed, including Nathan Richards' comprehensive analysis of use, reuse and discard practices as evidenced by the many ship graveyards across the region (Richards, 2002).

Further, the strong links established in the 1980s between object conservators and the nation's maritime archaeologists set the scene for routine pre-disturbance monitoring regimes and corrosion studies on shipwrecks, both nationally and internationally (see MacLeod, 1989, 1993, 1998). The essential nature of their work also featured in the first book published on the subject of iron and steamship archaeology (McCarthy, 2000). Sub-titled *Success and Failure on the* SS *Xantho* it was *inter alia* a cautionary "wait-and-see" for others considering raising marine engines from a saline environment in the wake of the apparently successful *Xantho* example. This has proved to be an essential warning for in 2004, just as the engine recovered some twenty years earlier was being re-assembled for display, massive sulphuric acid deposits necessitated a revision of conservation treatments for all the major wooden ship hulls recovered to date (*Vasa*, *Batavia* and *Mary Rose*). These alarming developments attest to the continuing importance of the links between maritime archaeology and conservation specialists, and the wisdom of the current focus on *in situ* preservation as the preferred site-management option.

The fact that maritime archeology in Australia did not begin with the study of the Aborigines, of their inundated or inter-tidal material culture might appear strange. Furthermore it did not start with Aboriginal interactions and possible intermingling with those "strangers on the shore", the Europeans and Macassans, who came either with all the trappings of power, or as defenceless, semi-naked shipwrecked sailors – such studies came later (Silvester, 1998). Maritime archaeology in Australia did not commence with the British and the French explorers who actually claimed the land, with their deposition and signal sites, their camps and observatories. Nor did it start with the American, British and French whalers and sealers who followed, and sometimes even led, the explorers. All had far more of a lasting impact on the place and its peoples than the Dutch and this might, to a reader unaware of the events of the past forty years, seem strangely anomalous. That the oral traditions and material record left by these diverse explorers and fishers, were all initially passed over for the

excavation of transient East India Company ships that struck the coast in passing, with, is trebly of interest. When examined more closely, however, it was the 1960s and 1970s public fixation on shipwrecks and treasure and the perceived paucity of the material remains left by these survivors and the Indigenous people that was a major cause. Unlike its university-based or CRM counterpart, museum-based archaeology of all forms needed fascinating and alluring objects for its collection, exhibition and education programs. These were often the catalyst for renewed public and academic enthusiasm, and these often led in turn to enhanced funding.

In the context of enhanced funding sources for the future, the notion of "Australian maritime heritage abroad" has appeared in recent years. In this view, the ships of explorers having great historical or social impact on Australasian shores are as much a part of our cultural heritage as they are of the parent nation and the occupants of the shores on which they came to grief. Recent work on HM ship *Roebuck* (1701) of William Dampier fame and the French vessel *L'Uranie* (1820) of Rose and Louis de Freycinet fame are two examples of this approach. Unable to be linked to existing funding mechanisms, privately-funded, Foundation-based expeditions to Ascension and the Falklands islands went in search of the wrecks in 2001. These proved successful, providing a focus for a number of historical, technical and social studies on the ships and those on board (McCarthy, 2004a). In a similar philosophical vein, staff of the Australian National Maritime Museum have been involved in the search for the remains of Lt. James Cook's *Endeavour* which after a long post-exploration career was scuttled in American waters during the Revolutionary War (Hosty and Hundley, 2001).

1.4. THE SOUTH-WEST PACIFIC REGION

Up until the mid-1980s, maritime archaeology in New Zealand was largely based around the work of Kelly Tarlton, a private museum operator. Influenced by the Western Australian work on the Dutch and colonial wrecks, Tarlton undertook site studies, research and exhibitions at his own expense. His "underwater" museum in Auckland became increasingly well-known and highly influential in the early 1980s, and though he was looking towards further collaborative work and exchanges within Australasia, he died in late 1985 aged just 57. For a while the discipline in New Zealand stalled, but now has strong underwater heritage legislation centering on the *Historic Places Act 1993*, and an active avocational body (Churchill, 1991, 1993).

New Zealand has considerable potential for underwater work with its extensive Indigenous Maori culture including sites such as war canoes and inundated fortified settlements (Kenderdine, 1991a, 1991b). There are also an estimated 1,125 shipwreck sites now protected under legislation in New Zealand but only three have been the subject of professional archaeological attention – *L'Alcemene* (1851), *Endeavour* (1795) and HMS *Buffalo* (1840) (Kenderdine, 1991a; Jeffery, 1988). The discipline of maritime archaeology in New Zealand

currently suffers as a result of dedicated staff and a responsible institution, and active site protection remains largely an issue for the future.

Nevertheless, an interesting and very creative pointer to the nascent strength of New Zealand's programs is the *Inconstant* project. A vessel hauled ashore for use as a warehouse in Wellington in 1850, subsequently built over and upon, emerged during redevelopment work for the Bank of New Zealand complex. Some of the timbers were raised in 1997 under the supervision of archaeologists and immersed in polyethylene glycol (PEG) to be presented elsewhere in the "Inconstant Gallery". All artefacts recovered were conserved, including those related to the wreck's role as a warehouse. The bow remains on public display as it undergoes *in situ* conservation treatment under a glass slab floor. Funded by the City Council and Lotteries, it is "enjoying a new function as a tourist attraction and tourist icon" in accordance with the ICOMOS Cultural Tourism Charter. The project is also operating a volunteer conservation unit out of a refurbished heritage ship (O'Keefe, 1999, 2001).

Of the other larger nations in the region, Papua New Guinea (PNG) currently has no maritime archaeology program, but recently the PNG Government provided official sanction for a remote sensing search for the missing Royal Australian Navy submarine *AEI* (1914) near Rabaul. The latest phases of this search were effected using remote sensing equipment and expertise developed and operated under the Australian National Centre for Excellence for Maritime Archaeology out of the Western Australian Maritime Museum. The *AEI* wreck, the Indigenous maritime heritage resource and the hundreds of wrecks and maritime sites, including those of WWII at Rabaul, are but a small indication of the maritime archaeological heritage there.

In the Solomon Islands a multi-national team including Australian practitioners and their French colleagues have investigated the remains of the ill-fated La Perouse expedition lost in 1788 at Vanikoro and the associated wrecks of the *Astrolabe* and *Boussole*. As part of the permit conditions the post-excavation development of a museum and interpretive exhibition was costed to the archaeological proponents. The Queensland Museum became involved with the conservation and registration of the material from the two shipwreck sites, and the report of the 1986 and 1990 expeditions has recently been published by the Australian Institute for Maritime Archaeology (Stanbury and Green, 2004).

1.5. THE FUTURE

Although the discipline of maritime archaeology in Australia has been advanced through strong legislation, dedicated heritage agencies, training programs and extensive field programs there remains much to do. There are excavation reports to publish, thousands of objects still to be conserved, exhibitions to present, maritime heritage trails to be finished, more public and volunteer researchers to involve, more private enterprises to engage as sponsors, more "not-for-profit" groups (e.g., the HMAS *Sydney* II Search Company) to be established. Assistance will also need be provided for programs to commence

and flourish in less well-developed parts of the region.

The theme that is absolutely central to the continued progress of the discipline is the unequivocal support of the general public, business and government(s) with a clear view that more resources are required. Where this support exists, maritime archaeology can swim against a modern tide where staff and programs are continually being "downsized" or where their focus is being diffused. Where it does not, or where there are moves to subsume it within broader maritime heritage studies, the discipline will be diminished. This subject has been aired recently in the context of the drive towards an "holistic" approach to maritime heritage and archaeology (Duncan, 2000, 2004; McCarthy, 2003).

Ironically, one way of keeping the discipline in the public and political eye might be the film and television industry and the growing and seemingly insatiable desire for documentaries and comment by expert practitioners on a wide variety of heritage sites. In 2003, for example, an unprecedented audience of over a million viewers per program watched Prospero Productions' three-part *Shipwreck Detectives* series. Public, administrators and politicians alike enjoyed and wondered at the *Batavia* skeleton mystery on land, with its multi-disciplinary forensics-based approach; the Broome Flying Boat story concentrating on the raid, the search, the survivors, oral histories; and the underwater archaeology and the search and examination of the World War II wrecks at Truk Lagoon.

Although the films presaged the various published reports (e.g., Jeffery, 2004; Jung, 2004), as requested by WA Maritime Museum staff and others, the film on the Broome aircraft was not released by Prospero until the entire suite of sites were protected. This was finally effected, after a decade of applying a creative "mix" of legislation and regulations, by the late 2003 declaration of the aircraft wrecks under the terms of the *Heritage of Western Australia Act 1990.* Administered by the Heritage Council, a body that had previously concentrated on land-based structures, their embracing of submerged aircraft sites brought an entirely new and potent force to the protection of the maritime heritage in Australasia.

For maritime archaeology in Australasia, the successes of the submerged aviation archaeology program at Broome and the widening of the stakeholding group to include new heritage agencies were also to become a new direction after 2000. As more managers from government agencies come to recognize the importance of the submerged heritage in all its facets, other legislation will be used to protect non-shipwreck sites. In late 2004 a PBY Catalina (*JX 435*) lost at Cocos Island during World War II was nominated to the Commonwealth Heritage List under the terms of the 1999 *Environment Protection and Biodiversity Conservation Act.* If successful, this nomination will bring yet another powerful force to the protection of the submerged cultural heritage, namely the national park authorities with their management expertise and their legal strictures. Like the terrestrial heritage legislation used in the *Inconstant* case in New Zealand, this broadening of legislative and management horizons bodes well for the discipline as we enter a more technologically-oriented age, and as we go ever deeper in order to protect the underwater cultural heritage of the region.

Chapter 2

Theoretical Approaches

Peter Veth

2.1. INTRODUCTION

In recent years Australian maritime archaeologists have developed some innovative theoretical approaches. The recent publication of two Australian doctoral dissertations in the Plenum Series in Underwater Archaeology (McCarthy, 2000; Staniforth, 2003) and the awarding of the 2004 Society for Historical Archaeology Dissertation Prize to another Australian doctorate (Richards, 2002) attest to this productivity. In this chapter twenty-one Australianist studies, which represent a sample of long-term and substantively-based projects where an explicit statement of theory and research design might be expected, are critiqued.

There are numerous recent and competent reviews, syntheses and readers covering theory in archaeology including Whiteley (1998), Dark (1995), Trigger (1993), Harrison and Williamson (2002), Shanks and Tilley (1992) and Johnson (1999). Volumes presenting theory in maritime archaeology include Gould (1983) and Staniforth and Hyde (2001). The first two chapters and bibliography in Gould (2000) are also worthwhile, as are several of the papers in the reader by Babits and Van Tilburg (1998).

As Staniforth and Hyde (2001:v) note, there are a number of excellent books available on method and technique (e.g., Green, 1990). There are also a considerable number of earlier papers which aim to identify research domains – such as the interface between maritime and terrestrial archaeology (e.g., Henderson, 1986; Nayton, 1992; Hosty and Stuart, 1994; McCarthy, 1998b; Stanbury, 1998). There is, however, clearly a paucity of effective publication on theory and research design in maritime archaeology. This is surprising given repeated criticisms from terrestrial archaeologists to the effect that maritime archaeology is an expensive discipline and produces little more than the

documentary record. It should be noted that there is also resistance to such material from some established maritime practitioners who appear to hold the view that active engagement with theory is simply unproductive.

The vast majority of major works, which contain explicit and persuasive theory have originated from University postgraduate initiatives – and most of these from only the last decade. Equally, despite repeated pleas for "reform" in the research focus and rationale of the cultural heritage management agencies which host the majority of positions and resources for maritime archaeology in Australia (see McCarthy, 1998a; Staniforth, 2000a), these organizations have not been the productive sites for theory that these critics have demanded.

As noted above, twenty-one works have been selected which represent long-term projects dealing with the recovery and analysis of substantial sites, features and assemblages and which could reasonably be expected to have at least a cursory discussion of theory and key research questions. These studies are grouped into two broad categories, as follows:

> **Group A** – Papers/studies which clearly outline high-level theory (e.g., historical materialism, neo-Marxism, ideational approaches) and which develop archaeological mid-range theory (Erskine, 2004; Gibbs, 1996; Lawrence & Staniforth, 1998; McCarthy, 1998a, 1998b, 2000; Staniforth, 1995, 1997, 2003; Veth and McCarthy, 1999; Ward, 1998);
>
> **Group B** – Studies which are comparative and empirical in their focus with an explicit statement of theory and clear analytical structure – containing some evidence of mid-range theory and behavioural explanation (Doyle, 2000; Garratt et al., 1995; McCarthy, 1988a; McPhee, 2001; Nash, 2001, 2002a; Richards, 2002).

This chapter provides a summary of each of these works and in doing so draws attention to current archaeological debates about the nature of explanation in underwater archaeology. It will also highlight studies that have questioned the value of the archaeological studies of iron vessels, steam ships, abandoned hulks and port-related structures.

2.2. GROUP A

In his doctoral thesis Nigel Erskine (2004) tackled the archaeology of the wreck of HMAV *Bounty* and the mutineers' settlement of Adamstown on Pitcairn Island. Despite a plethora of both reliable and less reliable documentary and oral evidence, this archaeological work remarkably had never been attempted before. Erskine examined the efficacy of different theoretical constructions of colonization with the particular insights afforded by the Pitcairn case study, where the hybrid British-Polynesian society remained undiscovered for 18 years. The Swiss Family Robinson model (Birmingham and Jeans, 1983) and the phases of establishment (i.e. exploration, learning, colonial enterprise and developmental change) is critiqued and found to be wanting (although representing a useful first base). Some of the limitations identified include a) the

need to accommodate reversals/failures in the initial colonization process (i.e. near-failure of the mutineer colony due to the imposition of a solely British land tenure system); b) the lack of an historical context for the colonization event. Pitcairn was neither historically unknown or unmapped (unlike the Robinsons' island); c) while the colonisers clearly relied on the skills, social structure and equipment they brought with them – the hybrid society was not culturally homogeneous nor exploiting a naive landscape; and finally d) the Swiss Family Robinson model is best suited to a trajectory of permanent settlement that does not easily accommodate diverse settlement types that may have had episodic and profound engagement with a larger world system.

Despite heavy post-depositional salvage from HMAV *Bounty* and recycling, transfer and commoditisation of these goods, Erskine was still able to synthesise archival and archaeological sources and critique an identifiable body of theory. In concluding his observations on both the efficacy and limitations of the Swiss Family Robinson colonization model, Erskine (2004:248) noted:

> ...while aspects of the Exploratory and Learning Phases of the model partly accommodate colonisation processes...in general the model fails to adequately represent the reversals that occurred at Pitcairn during the study period and is very limited in its ability to represent the colonisation process at Pitcairn Island. In this respect it has been shown that the colonisation process at Pitcairn Island is representative of a maritime frontier type and that the development of the settlement is directly associated with the evolution of an interconnected Pacific transport network during the nineteenth century.

The burgeoning study of whaling industries, both pelagic and shore-based, in Australia and New Zealand has been especially productive in generating theories of colonial survival, engagement with global economies and jurisdictional dilemmas faced by fledgling colonial authorities (cf. Gibbs, 1996; Lawrence and Staniforth, 1998; Nash, 2003b). As noted in a previous review of the Lawrence and Staniforth volume on whaling in southern Australia and New Zealand (Veth, 1999) "this project seeks to integrate the approaches of maritime and terrestrial archaeology. By synthesising data across the two countries and taking a regional and comparative approach, a number of key issues can be addressed for the first time".

This volume demonstrates conclusively that Aboriginal people and Maori were significantly involved in the whaling industry, unlike other industries that were to follow. There are references to equal pay and conditions for Aboriginal workers. It also seems that Maori comprised the majority of workers in whaling crews and that they held supervisory positions. Shore-based whaling stations are seen to have underpinned a number of early colonial economies, providing the mechanism for the subsequent adoption of pastoralism or by generating revenue to service rents owing on unproductive leases. The rhetorical question of whether the study of this industry could "provide the metaphor for the early and indiscriminate exploitation of the resources of the new frontiers of these southern continents?" (Veth, 1999:61) can be answered in the affirmative, as the

shore-based whaling stations rapidly depleted local stocks. Shore-based whaling stations are argued to represent significant cultural sites the careful study of which, paraphrasing Susan Lawrence, can overturn notions that these were frontier enclaves of rugged white male individuals operating largely in isolation.

In his doctoral thesis, Gibbs (1996) examined the historical archaeology of the shore-based whaling industry in Western Australia. In discussing the development of archaeological theories of adaptation he draws attention to frontier models and how colonisation was driven by information exchange and learning systems. Here the works such as Birmingham and Jeans (1983), Lewis (1977) and Hardesty (1985) as cited in Gibbs (1995:316, 328) are relied on. Following Hardesty's distinction between insular and cosmopolitan frontiers, Gibbs (1995:329) concludes that while the whaling camps were short-lived and economically specialized with production and revenue provisioning local consumption, they also were part of global networks with oil and bone sent for sale on the London market. A consistent pattern is detected in the west and south coast whaling stations whereby they "seem to have followed the same series of adaptations, decreasing in size, reducing capital expenditure and fixed works, and later increasing their mobility and using multiple stations" (Gibbs 1996:330).

Through a study of archival, trading and archaeological data, contextualised within a menagerie of theories that roost in neo-Marxist, cognitive, historical materialist and evolutionary ecology explanatory frameworks, Gibbs argues that the shore-based whaling industry was significant in two domains. Firstly, it underpinned early pastoral initiatives and provided a psychological remedy to the vicissitudes of these fledgling terrestrial industries. Secondly, it became part of a seasonal round for settlers based outside of Fremantle (and its colonial administration) hedging other local production. As Gibbs (1996:332) concludes "the Western Australian whalers were part of an international tradition, using the technology, terminology and techniques employed throughout the European world".

McCarthy (1998a and elsewhere) has probably been the most persistent and sometimes strident critic of the lack of explicit theory in Australian maritime archaeology. In his paper, which aimed to track theory and practices from 1971 until 1998 he asserts that a historical particularist/mitigation approach has dominated practice at the Western Australian Museum. In fact, earlier in the mid-1980s Henderson (1986) had already noted that a theory of maritime archaeology had yet to be developed, and in doing so raised influential issues and questions which led to theory building.

In his review McCarthy notes that although a philosophical broadening of explanatory frameworks was taking place, the overall picture was still essentially negative. Indeed, Hosty and Stuart (1994:17) had previously concluded that for maritime archaeology "its isolation from other branches of archaeology, lack of strong theoretical approach, inadequate representation in tertiary education, the ad hoc attitude to individual sites, lack of overall management strategies and the lack on interdisciplinary exchange all need to be addressed".

In McCarthy's opinion, the intake of students from 1996 and onwards into the Postgraduate Diploma in Maritime Archaeology, who had been exposed to undergraduate method and theory courses in archaeology, and the establishment of undergraduate and postgraduate courses at both Flinders University and James Cook University, represented a turning point (see Figure 2.1). Although the University initiatives were well supported by the traditional centres of maritime practice, and heavily subsidized by the host Universities, their forays into traditionally maritime areas were not always welcomed. McCarthy concludes by noting that the legacy of predominantly descriptive "grey literature" as the major output from the major maritime heritage regulators/ museums was still the major outstanding issue.

In a somewhat complementary paper McCarthy (1998b) provides an overview of the question of whether the study of iron steamship wrecks actually constitutes archaeology and indeed whether it meaningfully engages with theory (see earlier volume by McCarthy, 1988a, below). Previous declarations by Muckelroy (1980) and Lyon (1974), as cited in McCarthy (1998a), that the study of such wrecks was redundant, as they overlapped with the historical record, posed a serious challenge in Australia – where virtually all wrecks date to the historic period and the majority of these are iron-hulled and steamships.

McCarthy's long-term work has focussed on the colonial trader SS *Xantho* (1848-1872) and its colonial entrepreneurial owner Charles Broadhurst. The insights gained from examination of such a hybrid vessel, combining a

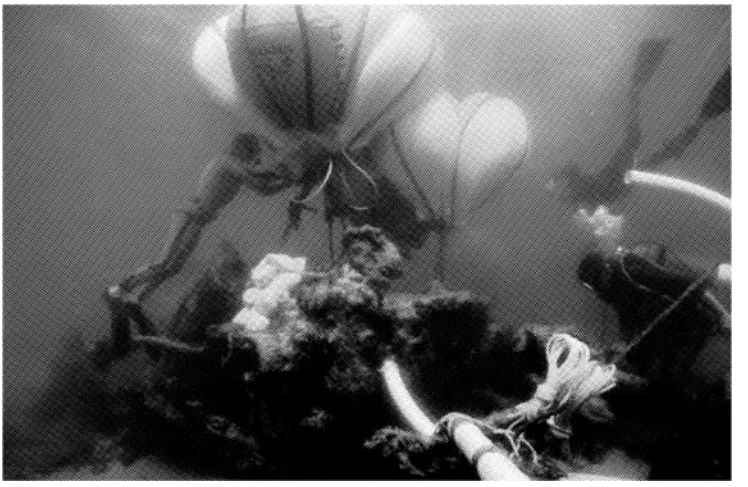

Figure 2.1. Raising the *Xantho* engine using lift bags (photo courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

clinker-built inshore hull (from Scotland) with a Crimean War steam engine, and the de-concretion/reworking of the engine (which highlighted many anomalies) has provided a solid case for the study of this category of wreck (McCarthy, 1988a, 1998b). When viewed in economic and social context it holds significance as a forerunner of extensive steam vessel trade along the west coast of Australia into Indo-Malaysian *entrepots.* The hull and particularly engine provide valuable insights into practices of recycling and abandonment in the latter half of the 19th century. Specifically the engine reflects a range of innovations made by the Royal Navy – such as standardization (coded parts), mass production, use of high-pressure steam, high-speed revolution and placement below the waterline (McCarthy, 2004b). The choice of this hybrid vessel and the modifications and repairs made to the vessel engine have been analysed using a range of theoretical approaches which illustrate that such constructions still contain "untold stories", above and beyond the documentary record (see Veth and McCarthy, 1999).

Most recently McCarthy (2000) has examined the broader potential of iron and steamship archaeology with reference to the success and failure of the SS *Xantho*. A detailed examination of the archaeology and fabric of the wreck was completed before a contextual and behavioural study of the owner/operator was carried out. McCarthy (2000:190-191) concludes that this approach "is capable of elucidating otherwise unobtainable aspects of behaviour, thereby shedding new light on past human life". He canvasses a range of theories and propositions about how and why Charles Broadhurst made the purchasing and operating choices that he did, including the fact that he continued to operate the vessel despite the fact it had become uninsured and was patently beyond its reasonable use-life (*sensu* Souza, 1998). Certainly the running repairs on the engine (e.g., lack of condenser, running in reverse) suggest "frontier-style" solutions.

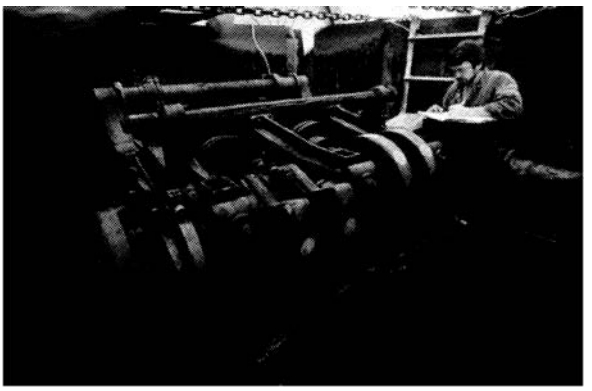

Figure 2.2. Archaeologist examining the *Xantho* engine after deconcretion (photo courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

Importantly, the *Xantho* project explicitly engaged with theory to seek plausible and alternative interpretations about the economic and social context of the vessel's life. It also provided a platform for biological and sedimentary studies that yielded a useful site formation model – not available then for shallow-water iron structures. Equally, the predisturbance survey and subsequent total deconcretion of the engine has provided a useful precedent for the subsequent "excavation" of features recovered from larger maritime sites (such as the "Ali Baba" jar from HMS *Pandora* which contained carpenter's repair gear). Understanding of site formation processes and subsequent management was facilitated through the theoretical and methodological integration of both conservators and archaeologists from the outset. As MacLeod et al. (1986:113 as cited in McCarthy, 2000:186) note:

> The wreck site of the iron steam-ship *Xantho* has provided a model for how an underwater archaeological site can be managed. Predisturbance surveys of the marine biology and electrochemical and physical environment of the site established reference criteria for monitoring changes in the site conditions.

Mark Staniforth (1995, 1997, 2003) has probably made the most sustained contribution to theorising in maritime archaeology in Australia. In his initial paper (1995) concerning the dependency of Australian colonies on imported goods he focusses on how successful colonization is underpinned by the ongoing supply of food, drink and material culture. The symbolic capital of such supply is clearly both cultural and psychological. Australia was not just the recipient of material culture from the parent country (Great Britain) but almost immediately joined a wider regional and global system including suppliers based in India, South Africa, Asia, the Pacific Islands and North America.

In a subsequent paper Staniforth (1997) outlines his engagement with the *Annales* school of history. In a "call-to-arms" for theory in maritime archaeology he reminds us that multi-valency in theory and explanation is desirable. Furthermore we should not be seduced by the generalist law-like theories, which indeed under-pinned most of the contributions to the volume on shipwreck anthropology edited by Richard Gould (1983). *Annales* approaches have been utilized by a range of terrestrial archaeologists for some time – however they had still to make their impact in the maritime world. By providing a framework for understanding history at different scales of analysis (a perennial theme for all archaeologists), the *Annales* school opens up numerous opportunities for discriminating between different kinds of explanations for behaviours and events "entrapped" in one episode of wreckage/loss/abandonment. In summary, the scales of history cover a) short-term events and individuals, b) medium-term processes and c) those that are long-term – at the scale of world views and geological change. Simple analogues (using a Dutch *VOC* example) might include the difference in understanding a) the act of mutiny (and the mutineers) on board *Batavia*, b) the structure and impact of the governance of the Dutch

East India Company, and c) the colonial condition that provided the philosophical basis for appropriating an existing and endogenous trade empire (in this case largely spices).

In a subsequent and vigorous broadside at the discipline, Staniforth (2000a) poses the critical question of where the future lies for maritime archaeology (or indeed if there is one). In reviewing attempts at anthropologically-oriented studies in maritime archaeology he cites McCarthy (1998a:33-34) who noted that there was a "fundamental set of interconnected weaknesses that mitigated against debate in maritime archaeology in Australia". Staniforth is essentially in agreement and concludes that maritime archaeology still lacks theoretical sophistication and is likely to continue in this vein until the number of postgraduate students in maritime archaeology increases. He goes on to profile the lack of job opportunities in Australian maritime archaeology, the under-performing role of Commonwealth-funded agencies in seeding new jobs and theory-oriented research, the important role of avocational groups, and the critical role of further education in maritime archaeology by practitioners who have had adequate exposure to archaeological theory.

Although agreeing with the central tenet of this critique, it is considered somewhat dangerous to polarise the practice of a still emergent (and logistically hungry) discipline into the "haves" and "have-nots" of theory. The writing of some theory-laden pieces may have only taken a few days to pen – while conserving artefacts and gathering appropriate attributes from different assemblages (be they ceramics on the *William Salthouse* or personal effects on *Batavia*) have taken decades. What still seems to be at issue is the (apparent) unwillingness of some practitioners to entertain the notion of providing alternative explanatory frameworks for understanding the different sites, features and assemblages they are faced with – and which have been produced by different site formation processes, technologies and social orders of different scales of chronological resolution. Clearly the major burden for coordinating advances in theory has (reasonably) fallen on to the universities.

Finally, in an impressive reworking of his doctoral thesis Staniforth (2003) looks in greater detail at the theoretical relationship between material culture and consumer societies – by advancing an analysis of the goods destined for the dependent colonies of colonial Australia. The acquisition and consumption of food, drink and other consumer goods by Australian colonists formed part of the conspicuous consumption of the wealthier classes and represented the ideology of prosperity for those who were still aspirant. He concludes that these imported goods reflect cultural morays and behaviours illustrating cultural continuity. They also serve a personal and psychological role in reifying people's sense of place and purpose in the new colony. Lastly, these goods are seen as active agents in manipulating social relations. The ideational, neo-Marxist thrust of this analysis (albeit within the framework of the *Annales* school of history) is quite evident. Human agency and the process of choice are given voice in Staniforth's critique (2003:154) in the sense that strategic consumerism either confirmed individual control over circumstance (and thus sustained residence within a frontier context) or allowed aspirants to signal

different kinds of mobility through consumption of premium, prestige goods (e.g., more expensive beverages). Particular attention is paid to the quality of goods displayed, shared and consumed (be they ceramics, glassware or alcohol).

Staniforth (2003:155) explicitly outlines the basis of his journey into new theory and resultant methodological innovation. In short, he aims to move beyond (but not ignore) economic and technological factors to give adequate attention to cultural meaning. The social and cultural aims of the research are identified and then relevant data collected to address these. Although in a sense employing a hypothetico-deductive approach in this selective acquisition of data sets – Staniforth is clearly breaking the shackles of positivist convention. The analysis of the meaning of objects is not new to mainstream archaeology (e.g., Shanks and Tilley, 1992). It is, however, still under-developed in maritime archaeology globally. This volume highlights that the meaning of artefacts can change during their use-lives or when they move between cultures. A one-off functional or stylistic designation of an artefact will unlikely capture the changing meaning of, for example, a cannon salvaged from the HMAV *Bounty* site – which is successively used for display, signalling and then sold-off as a commodity by the mutineers' descendants.

In their paper canvassing frameworks for explanation in maritime archaeology, Veth and McCarthy (1999) identified alternative ways of interpreting anomalies on board the wreck of the SS *Xantho.* This was probably the first paper to consider the attributes of artefacts and features produced from a long-term multi-disciplinary excavation program in the light of different (and competing) explanatory frameworks. In this paper a processual versus post-processual dichotomy was set up. The anomalies associated with the vessel included its comparatively great age, hybrid clinker hull and below-the-waterline high compression engine, lack of condenser, the fact it was running in reverse and a plethora of other running repairs suggesting that it had been "customised" to work off the Western Australian coastline. The vessel was owned and operated by Charles Broadhurst, an early quintessential Western Australian entrepreneur, who pioneered a startling array of industries from pearling and canning of sardines, through to guano extraction and the transport of ore and other commodities along the WA coastline.

The processual and positivist approach examined the anomalies aboard SS *Xantho* and entertained a number of scenarios for the nature of its operation and loss. A hybrid vessel capable of operating without regular supplies of freshwater and quality coal, and with an engine coded and designed for inter-changeability of parts and robustness, was an ideal configuration for a frontier situation of this kind. The vessel was designed to have maximum cargo space, it could accept most kinds of cargo and it was a relatively robust and easy to maintain system. It was competent to steam the length of the west coast and to run to key ports in the Indo-Malay archipelago with valuable commodities such as mother-of-pearl. Typically, as with many other under-capitalized entrepreneurs, the vessel was run past its use-life and was uninsured when lost. Much of the cargo, however, was salvaged.

A post-processual (here ideational) approach depicts the owner Charles Broadhurst as a risk-taking entrepreneur, typical of later generations to call Western Australia their home. The anomalies recorded from *Xantho* may be seen to reflect the idiosyncratic and often flawed decisions made by this highly energetic, though technically ill-prepared and counselled, individual. An analysis of the inter-personal and family relations experienced by Broadhurst show that he was rarely to profit, either financially or arguably emotionally (in terms of his own perceived standing in "society"), from these initiatives. Broadhurst signalled his success through the purchase of a "new" coastal steamer, as well as the high profile sponsoring of a land-allocation in the East Kimberley and the beginning of a fleet-based pearling operation in Shark Bay. He was also thwarted time and again due to lack of relevant technical knowledge and what might be labelled today as a sustainable business plan. On each occasion he combined vision about a new industry with a high-risk approach, including lack of recurrent funding and often *ad hoc* technical advice, to take a fledgling industry to the first stage of establishment – after which time others (including his sons) took them over and made them profitable. Both business and parliamentary acclaim evaded Broadhurst for most of his life. The purchase and fitting of a comparatively cheap coastal steamer (*Xantho*) to operate in remote and sometimes high energy conditions, followed by a series of quixotic modifications and repairs, is entirely consistent with other documented behaviours of the owner.

In her Masters thesis Ingrid Ward (1998; and see also Ward et al., 1998, 1999) tackled the need to re-visit site formational processes on maritime sites. With a background in geochemistry and marine systems, she was struck by the fact that although human behavioural processes (such as abandonment and salvage) had been considered, the physical processes of transformation had not been adequately covered. Her thesis was to consider far more complex models incorporating physical, chemical and biological changes as these affected wreck sites variably through time. Central to her argument was the notion that wreck disintegration did not necessarily occur in a unidirectional fashion or in an evenly timed manner. It could not be assumed that physical disintegration would always be followed by subsequent biological and chemical changes. The main reason for this lack of predicability in succession, order and magnitude of impact was essentially due to the dynamism of sedimentary regimes around a wreck site. Due to effects such as variation in tides, surge, storm events and the different entrapment scenarios offered by the physical profile of the wreck's fabric as it collapsed, structural features might be exposed to aerobic conditions and hence biological colonization and oxidation or alternatively might become covered by accumulated sediments and reach stasis in anoxic conditions. Evidence for burial of wreck sites in deep marine sediments and then their subsequent (re)exposure and transformation through kick-started biological colonization and further physical transformation, comes from the SS *Xantho* (McCarthy, 2000).

Ward and colleagues carried out detailed logging of currents, directionality, salinity and modelling for seabed contour change through time

from the site of HMS *Pandora*. Although this is a deepwater site (>30 metres) strong bottom surges and local storm events are documented. Ward's work focussed on site formation "processes", rather than retrospective and intuitive reconstructions based on the "outcomes" of this process (i.e. the contemporary configuration of the wreck). Some of the major implications of the work were to draw attention to the fact that a) wreck disintegration/formation is likely to be highly episodic and unlikely to progress at a steady rate, and b) any meaningful site management plan needs to gain a basic understanding of the parameters of these physical processes.

In another Masters thesis Shane Brown (1996) examined several colonial period iron and steel wrecks around Magnetic Island, North Queensland, whose date of loss (due generally to scuttling) was known to be around the turn of the nineteenth century. Their role as datable artificial reefs was of use to marine biology, in terms of understanding succession of marine organisms. The distribution and effect of these organisms on the structural integrity of the wreck was also of interest – as it had been suggested that once climax communities were established – they may in fact act to slow down rates of corrosion. Quadrat surveys of sessile marine growth on and off the wreck sites, mainly on comparable platform reefs, showed that indices for both richness and diversity of marine species were higher on the wreck sites. Both the complex architecture of the structures, sitting at least partly proud of the seabed floor, and their metallic composition, appear to have generally provided a highly productive micro-environment.

All of these wreck sites were located in low to medium energy shoal waters. Clearly similar work is now required in higher energy and deepwater sites so that meaningful comparative statements can be made about the nature and rate of biological growth and its possible role, once at climax, in stabilizing or slowing down corrosion rates. Certainly disturbance of previously buried wreck timbers to aerobic conditions has been linked to an increase in microbiological activity. These two studies examining physical and biological systems operating at wreck sites (and there are others) make a theoretical contribution as they explicitly aim to identify and control for the natural transforms operating at cultural sites. Without an adequate handle on natural site formation processes and subsequent taphonomic changes at a wreck site any subsequent analysis of associated assemblages and their behavioural correlates is potentially compromised.

2.3. GROUP B

As noted above, this group of papers contain evidence of mid-range theory and behavioural explanations, however their explicit identification of theory (rather than just research design or methodology) is less developed and/or explicit than Group A. Indeed works such as that of Nathan Richards (2002) are excellent in both their methodological rigour and interpretative value – it is just that the theoretical basis of the resulting explanations is less developed. My

discussion of these works will be somewhat brief in contrast to Group A, simply due to the fact that their theoretical and methodological basis is easier to encapsulate.

In his Masters thesis Coleman Doyle (2000) examined the significance of associations between vessel loss and discard and major social and economic events in the Cleveland Bay catchment of North Queensland. He canvasses a wide range of theory concerning vessel loss, risk-taking behaviour and recycling (covering seminal works by Dumas, Lenihan and Souza; amongst others). Doyle demonstrates (in a probabilistic sense) that the patterns of loss and discard were not random and were likely linked to several major episodes of change in port-related facilities, events such as the gold rush and the transition from sail to steam. There was also a pronounced recycling of vessels as breakwaters following major cyclones.

In examining archaeological remains at the Albany Town Jetty, Garratt et al. (1995) provide a clear research design and detail their research hypothesis. They recognize the inherently stratified nature of materials lost from jetties and therefore predict for stratigraphy revealing the passage of time. They consider the discard/loss zone from moored vessels (using analogues from the Long Jetty at Fremantle) and target recovery towards this area of the seabed.

As noted above, the need to study iron ships and steam shipwrecks has been persistently championed by McCarthy and colleagues. A collection of papers in the late 1980s dealt specifically with the research and management values of these sites (McCarthy, 1988a). In a section entitled "Management programs and the theoretical base", papers by Henderson (1988), Clark (1988), May (1988) and McCarthy (1988b) tackle this issue. For example Henderson (1988:11) notes "archaeologists have only recently begun to contemplate iron and steam shipwrecks as a truly significant part of this Nation's cultural heritage". Clark takes up the issue of a lack of publications on what constitutes historical significance in maritime archaeology, whereas May targets lack of continuity of resourcing of the Maritime Archaeology Section of the Queensland Museum (and its research) as a major impediment to effective site management in that State. Finally, McCarthy raises the need to create a nexus between scientific archaeology on wreck sites and their effective presentation and interpretation to the public (through wreck trails, public education programs and the like).

The history and archaeology of pearl shelling in Torres Strait forms the basis of Ewen McPhee's doctoral dissertation (cf. McPhee, 2001). In short, the work aims to explore the varied ethnic and cultural groups that made up the original Torres Strait Pearling operation (Torres Strait Islanders, Aboriginal people, Japanese, "Malays", South Pacific Islanders and Europeans). The influence that these groups brought to bear on maritime technology, subsistence and habitation behaviours is examined from detailed excavation and recording of terrestrial pearling sites from Wai Weer and Good's Island, and recording of features at six further islands in the Torres Strait. Wrecked historic luggers have also been examined as part of McPhee's ongoing work.

Figure 2.3 Flinders University students recording an abandoned vessel in the Garden Island ships graveyard in South Australia (photo courtesy of the Department of Archaeology, Flinders University).

In his doctoral thesis concerning the deliberate abandonment of watercraft in Australia, Richards (2002) provides an outstanding review of taphonomic theory and site formation studies. He highlights the need for further study of the cultural factors contributing to shipwreck disintegration, such as strategies employed in salvage. Richards takes a nomothetic comparative approach and in so doing can persuasively argue that discarded vessels are not shipwrecks. Richards (2002:379) notes that: "they are non-catastrophically made a part of the archaeological record. The array of decision-making processes that defines this makes them a reflection of the changing techno-economic circumstances associated with their abandonment".

It is argued that discard trends of vessels are responsive to changes in the national economy and global events such as war. Discard sites are therefore viewed as a reflection of changes in trade conditions, as are the observed patterns of lateral recycling and re-use of vessels. Richards (2002:387) concludes that this work is innovative in taking a comparative approach and in explicitly combining the assumptions that watercraft are artefacts imbued with cultural norms, and that they are sites for anthropological inquiry. The comparative approach, combined with a range of abandonment and transform theories, are seen to provide the vehicle for the re-evaluation of abandoned vessels as sites worthy of study.

The final discussion of this grouping of theorists touches on the work of Michael Nash (2001, 2002a) and the results of the *Sydney Cove* shipwreck

project. The collection of goods recovered from the 1797 wreck provides an insight into early trade consignments to the colony, including alcohol, foodstuffs and textiles. Although these were mainly sourced from the Indian subcontinent luxury goods such as Chinese porcelain and teas were also present. The cargo represented an extension of the "Country Trade" with links from Europe through to China. As Nash (2002a:57) concludes even at the very start of the colony luxury goods, such as porcelain, were in demand with the suggestion that the supply of desired foodstuffs, beverages and export porcelain was necessary to satisfy the "dietary conservatism" of the colonists (see Staniforth, 2003). From the wreck itself, Nash is able to deduce that the scantlings of the Indian-built vessel were less than those of equivalent European vessels and that the construction of three masts (and their sail area) would have placed additional stress on a lightly built keel. The overall significance of the vessel (following Henderson, 1986:151) is seen to lie in its representativeness of vessels that began the trade between Australia and the outside world, facilitating the transformation of a penal colony to settlement and finally nationhood. In the conclusion to his book Nash provides valuable commentary on the formation of the site and larger economic systems with which the Country Trade engaged.

2.4. CONCLUSION

This chapter began by noting that Australian maritime archaeologists have engaged in innovative theory and practice, and the review of relevant studies from the last 15 years supports this contention. I have also aimed to show where some critiques of theory in Australian maritime archaeology have probably been somewhat polemical in nature. I conclude that it is only reasonable and timely that supervised and guided postgraduate studies of wreck sites, their assemblages and other underwater and port-related features should be located in tertiary institutions and that these will be the power-houses for theoretical innovation. Effective linkage of tertiary guided research into holding institutions (such as museum collections) has still to be achieved nationally.

What is unique to maritime archaeological practice (be it survey, excavation, mitigation or management) is the scale of the logistics and costs associated with these activities and outcomes. To not facilitate or expedite linkage between holding institutions, statutory heritage authorities and tertiary-based research is to potentially compromise a non-renewable resource. I have no doubt that the pace and quality of theoretical innovation will increase over the next decade, given maritime archaeology will be taught and studied in at least three Australian Universities. The remaining challenge is whether or not the "guardians" of the major maritime collections will develop a unified policy to release the "fuel" for such endeavour.

Chapter 3

Artifact Studies

Mark Staniforth

3.1. INTRODUCTION

This chapter will consider some of the significant artifact studies that have been conducted in Australian maritime archaeology over the last two decades. It will examine what has been learnt from the detailed study of artifacts from Royal Navy vessels as well as cargo material, personal objects and so-called "collected" items found on shipwreck sites as well as artifact studies associated with jetty sites. It will briefly explore the relationship between artifacts from wrecks and similar artifacts found on terrestrial historical archaeological sites primarily by considering the meanings of these objects. It will suggest some ways that artifact studies can contribute to our understandings of trade, colonial societies and even site formation processes.

Lawrence (1998:8) has suggested that material culture studies can be divided into three broad types. The first type are empirical studies involving the construction of artifact catalogues and databases using techniques like seriation to establish accurate chronologies of artifact types. Shipwrecks, of course, often provide securely dated contexts for artifacts while the same artifacts from terrestrial sites can often be difficult to date precisely. Furthermore, the inventory of imported colonial goods, as recovered from terrestrial sites, can be skewed for a variety of behavioral and taphonomic reasons, so the examination of wrecked cargoes provides a unique opportunity to examine artifact assemblages. Unfortunately, only a few shipwreck artifact catalogues have ever been published in Australia despite their potential use for detailed comparative studies. One example was Sarah Kenderdine's South Australian study: *Artefacts from shipwrecks in the South East 1851-1951* (Kenderdine, 1991) and other examples are discussed later in this chapter (Campbell and Gesner, 2000;

Stanbury, 1994, 2003). Such catalogues and databases are essential tools for developing interpretations of large-scale artifact assemblages from shipwreck sites and in recent years some are becoming increasingly accessible using relational database software programs such as Microsoft Access. For some years there have been proposals regarding the establishment of a National Artifact Database but to date this has yet to become a reality.

Lawrence's second type of material culture studies are ethnographic studies of material life which are aimed at the material aspects of everyday life. She suggests that these have been more common in American historical archaeology than in the Australian setting despite considerable potential for such studies to illuminate the ways in which convicts, immigrants or the poor lived. Indeed it has been asserted that: "Ultimately maritime archaeology seeks to provide information about the way in which people lived in past times whether this is through technological, economic, social or cultural information" (Staniforth, 1991:21). Despite this assertion, there have been virtually no serious studies conducted in Australian maritime archaeology of, for example, the everyday lives of working seamen through their material culture. Possibly the site with the best potential for such a study was, and still remains, HMS *Pandora.* There is enormous potential for comparison between the material culture found in the officers' cabins in the stern and that of the common seamen in the bow. The former area has been largely excavated, while the latter remains for a future generation of maritime archaeologists to investigate.

The third category deals with the cognitive aspects of material culture that involves the consideration of the social and cultural meanings of objects. Lawrence has made use of Bourdieu's concept of *habitus,* which she defined as "the understanding of the behaviours and practices appropriate to one's place in society" (Lawrence, 1998:8). The meaning of any artifact is a construction, which, at best, only holds true at some particular historical time and within a specific cultural or social context (Staniforth, 2003:21-26). Artifacts can have multiple meanings contemporaneously as well as meanings that change over time. Meanings are attached by people to the shape, texture, color, decoration, use and discard of the object. These meanings arise from historical associations and may have emotional connections. Furthermore, meanings are not fixed and will vary according to chronological and geographical location as different cultures and individuals attach different meanings to a particular object at different times – over the life history of an artifact (Kopytoff, 1986).

3.2. ROYAL NAVY ARTIFACTS

Two Royal Navy vessels that were lost in Australian waters during the late eighteenth century have been the subject of extensive maritime archaeological investigation over the past twenty-five years – HMS *Pandora* and HMS *Sirius*. The history and background to the archaeological excavations of HMS *Sirius* and HMS *Pandora* are discussed in more detail in Chapter 5. Nevertheless, these two Royal Navy wrecks have generated a significant number

of detailed artifact studies and aspects of some of these will be discussed in this chapter. The final years of the eighteenth century have been a significant focus for Australian maritime archaeologists with work being conducted on *Sydney Cove* (1797) and the Lapérouse wrecks (1788), in addition to HMS *Pandora* and HMS *Sirius*. The most recent artifact catalogue is that contained within the Lapérouse report (Stanbury and Green, 2004) which provides details and photographs of the material found during survey and excavation of the two French exploration vessels *Astrolabe* and *Boussole*. This material is directly comparable with that from *Pandora* and *Sirius* and shows some remarkable similarities but also some important differences.

In 1994 Myra Stanbury published an illustrated catalogue of artifacts from HMS *Sirius,* which was wrecked in 1790 (Stanbury, 1994). Extensively illustrated with black and white photographs and line drawings, this is an extremely useful catalogue of what is a comparatively small assemblage of material culture from a late eighteenth century Royal Navy vessel. This is more than a "laundry list" of objects as Stanbury has made an attempt to "relate the artifacts to the social, cultural and technological context of the period" (Stanbury, 1994:90). As the wrecksite lies in a shallow water surf zone on a flat limestone reef it should not be surprising that most of the artifacts consisted of only the most durable materials, primarily metals. In addition to the usual cannons and anchors, artifacts associated with the structure of the ship predominated, including copper and copper-alloy fastenings such as spikes, nails and bolts, as well as rudder fittings, pump fittings and at least 200 cast iron ballast "pigs" (or kentledge). The presence of the copper and copper-alloy fastenings as well as copper sheathing and sheathing tacks provide us with direct archaeological evidence about the experimentation and innovation that took place in British shipbuilding during the late eighteenth century.

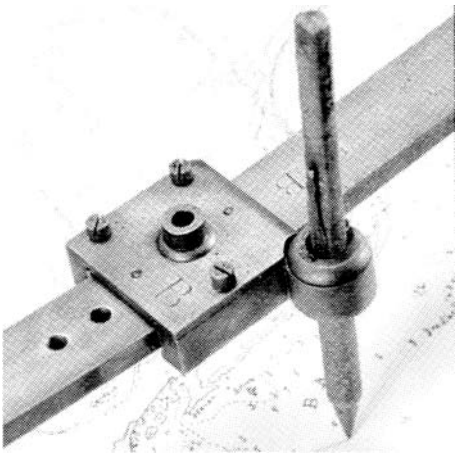

Figure 3.1. Pantograph used to copy charts, recovered from the *Sirius* site at Norfolk Island (photo courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

As *Sirius* was extensively salvaged, both during and after the wrecking event, it is perhaps surprising that copper alloy parts of some interesting navigational and scientific instruments were found including a sextant, dividers and a brass pantograph, which was used to copy maps and charts (Stanbury, 1991a, 1994:58-66). One might have expected that such valuable instruments would have been among the first items salvaged after the vessel was wrecked but, for some reason, they were not and therefore made their way into the archaeological record. Similar navigational dividers have also been documented from an early nineteenth century whaling vessel wrecked off the north-west coast of Western Australia (Nutley, 1987a). Very few ceramic and glass artifacts were found and all were broken but at least some of the glassware appears to have been associated with the activities of the ship's surgeon including part of the rim of a cupping glass used in "bleeding" the patient (Stanbury, 1994:67).

Just a year after the loss of HMS *Sirius,* HMS *Pandora* (1791) was wrecked off the coast of what would subsequently become the Australian state of Queensland. Since the early 1980s a program of archaeological excavation by the Queensland Museum has generated an enormous artifact assemblage. Material raised between the finding of the wrecksite in 1977 and the 1995 excavation season has been the subject of an illustrated catalogue (Campbell and Gesner, 2000:53-159). Some of these artifacts, such as the ship's fastenings and fittings, are similar in nature and directly comparable with material from HMS *Sirius.* Preservation conditions on the *Pandora* site (deep water and a sandy seabed) are much better than on the *Sirius* site and, as a result, ceramics, glass, organic and other fragile artifacts have not only survived intact but often essentially in their original context within the ship. A brass bulkhead fireplace, for example, was retrieved from the stern area and is thought to be part of the furniture "installed in the Great cabin prior to the *Pandora*'s final voyage" (Campbell and Gesner, 2000:74). The *Pandora* catalogue falls very definitely into the first category of "empirical study" mentioned by Lawrence as the majority of the artifacts are illustrated with black and white photographs and line drawings with only basic measurments and descriptions provided. At present, as the authors admit, "analysis of this collection is still in an early stage" (Campbell and Gesner, 2000:54) and as yet no catalogue is available for the considerable number of artifacts raised after the 1995 season.

Ron Coleman's comparative analysis of the use of olive oil by the Royal Navy during the eighteenth century draws on data obtained from historical and archival sources as well as both terrestrial and maritime archaeological sites including HMS *Pandora.* He clearly demonstrates that these large earthenware jars, originating in the Tuscan region of Italy, were used by the Royal Navy throughout the eighteenth century to transport and store olive oil both on board Royal Navy vessels and at shore establishments (Coleman, 2004; Campbell and Gesner, 2000:109). These containers (also sometimes called "Ali Baba" jars) have regularly been found on Royal Navy warship wrecks dating from 1703 to 1798 as well as at shore establishments. Coleman describes them as "robust,

inexpensive, single-use, non-returnable, export containers" which, once empty would "have many secondary uses" (Coleman, 2004:129). As well as this kind of large-scale comparative study, Coleman has also written about some of the very specific artifacts such as the "Taylor's" common pump from HMS *Pandora*, which was one of the many experimental attempts to improve ship's pumps during the late eighteenth century (Coleman, 1988b).

As well as studies of groups of artifacts there have been two studies of single artifacts known as filtering stones or "dripstones" that were used to filter the fresh water supply aboard ship. One example was found during the excavations of HMS *Pandora* and two others came from the trading vessel *Cumberland* lost in 1830 (Stanbury and MacLeod, 1988; Coleman, 2001). Usually made from sandstone or limestone, dripstones helped to provide drinkable water on the long voyages from Europe to Australia. Unfortunately, however, the main effect of the filtering process was to improve the taste of the water as it produced clear water, not necessarily clean water (Staniforth, 1993b:137). The reason for this was that many bacteria and viruses were small enough to pass through the dripstone and it would not be until the 1880s that a truly effective water filter would be introduced.

The *Cumberland* dripstones were an interesting example of archaeological detective work and remind us that even relatively recent archaeological artifacts can be difficult to identify, particularly if they are broken and incomplete. These had been raised from the wrecksite in Western Australia in 1984 but remained unidentified until Museum maritime archaeologists visited Norfolk Island in 1985 as part of the *Sirius* project. Similar objects in the convict settlement there immediately revealed their function and subsequent optical microscopic and Scanning Electron Microscope (SEM) analysis confirmed that the *Cumberland* dripstones had, in fact, originated on Norfolk Island. This revealed something of the extent of early inter-colonial trade between the eastern colonies of Australia and the Swan River settlement in Western Australia (Stanbury and MacLeod, 1988:8).

3.3. CARGO ARTIFACTS

Often maritime archaeologists focus on the transport stage in the life history of artifacts by examining the cargo that is being transported from one port to another. Clearly this can provide valuable archaeological evidence about the nature and extent of trade, specifically about precisely what objects were being carried as well as exactly when and where they were being transported. One of the common claims by some historians is that trade has been well documented during recent centuries – that written records of shipping movements and detailed cargo lists are both available and comprehensive. It has been argued, however, that although the available documentary sources are sometimes extensive, they are frequently not comprehensive and they often lack the detail necessary in order to draw supportable conclusions about past societies (Staniforth, 2003:17). Furthermore, it has been argued that taking a

cultural perspective to examine economic activity can often illuminate different aspects of the past, and that it is necessary to interpret the material culture (in the form of the cargo) in terms of the societies for which it was bound (Staniforth, 2003:21-26). Although this chapter focusses on the nature of Western trade, primarily between the centre (Europe) and the periphery (the colonies), the movement of shipwreck artifacts can also be used to examine other kinds of trade networks. A good example of this is the study of the Indigenous transfer of LaPérouse artifacts in the southeast Solomon Islands that has shed light on the nature of trade and patterns of interaction in part of the southwest Pacific in the proto-historic period (Clark, 2003).

Figure 3.2. A selection of artifacts recovered from the *James Matthews* site (photo courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

A number of artifact studies have been completed in the state of Victoria over the past two decades that have focussed primarily on two shipwreck sites - *William Salthouse* (1841) and *Loch Ard* (1878) (Staniforth 1987; English, 1990; Stuart 1991; Peters, 1996; Fielding, 2003). The earliest of these was a study of the cask (barrel) component of the cargo of the trading vessel *William Salthouse* that sank at the end of a voyage from Montreal in Canada to Melbourne in 1841 (Staniforth, 1987). This work clearly illustrated some of the shortcomings of written cargo manifests as the archaeological assemblage contained casks not listed in the "official" cargo manifest. It also demonstrated that, according to the brands and stencil markings on the cask heads, the quality of the salted pork and flour in the casks that were being imported into the newly established colony of Victoria was neither the best, nor the worst, quality available at the time.

Part of the contents of the casks of salted meat from *William Salthouse* were the subject of an archaeological analysis of nineteenth century butchering patterns for an Honours thesis at La Trobe University in the late 1980s (English, 1990). This study focussed on the surviving bone material from beef (*Bos taurus*) and pork *(Sus scrofa*) casks and found that "the Canadian butchering pattern used, except in the case of beef limb division, was indistinguishable from patterns used by Australian retail butchers selling fresh meat last century" (English, 1990:63). The analysis also clearly demonstrated that "salted meat cuts need not necessarily comprise only boned pieces" as some historical archaeologists working on the First Government House site in Sydney, New South Wales, had previously assumed (English, 1990:63).

In another Honours thesis conducted at La Trobe University, Morgan examined the morphology and traced some of the origins of the glass bottles from the *William Salthouse* (Morgan, 1990). This study revealed three distinctly different styles of bottles, many of which were complete with contents. Nearly half of the "French Champagne" style bottles, for example, had corks stamped on the bottom surface with the letters AY in a circle which actually proved to be a village in the Champagne region of France (Peters, 1996:64). Subsequent research demonstrated that direct trade between France and what had been French Canada had almost entirely ceased with the British takeover after 1760 (Staniforth, 1999). The restrictions arising from the Navigation Acts meant that the movement of goods such as French Champagne to Canada involved transhipment at some intermediate British port. Interestingly, the final voyage of the *William Salthouse* represented an attempt to circumvent those same Navigation Acts by conducting trade directly from one British colony (Canada) to another (Australia) without making port in the mother country (Britain). Another study of nineteenth century glass bottles involved the examination of some of the bottles from the *Loch Ard* (1878) conducted by Stuart (1991). Stuart, like Morgan, emphasizes the importance of shipwreck cargoes in the study of artifacts where both the date of the wreck and the nature of the cargo are well documented.

Morgan's work was subsequently followed up by research involving the analysis of some of the bottle contents (primarily wines) conducted by Peters (1996). This research included sensory analysis of the wine in the form of wine tasting conducted by knowledgable and experienced wine tasters. Peters concluded that: "Although not all archaeological wines can be tasted due to excessive salt and micro-biological spoilage, a tasting exercise, used in conjunction with chemical analysis, can provide a valuable qualitative as well as quantitative description of the wines" (Peters, 1996:65).

Generally speaking the efforts of historical and maritime archaeologists have had limited effect on the wider discipline of Australian history. Archaeologists have regularly made claims about the importance of the vast quantities of broken bits of ceramics and glass that come from archaeological sites but many historians (and even, one suspects, some archaeologists) fail to see the point of using material culture to understand, or tell stories about, the past. In a departure from the accepted norms, historian Kate Fielding has used

material culture from the *Loch Ard* shipwreck to examine some of the meanings of the *Loch Ard* "tragedy" where all but two of those on board died in the wrecking event. She argues that artifacts can be seen as "embodiments of contemporary fascination with the wreck drama" (Fielding, 2003:7).

One of the most comprehensive artifact catalogues produced on cargo objects excavated from an Australian shipwreck is the *Eglinton* report (Stanbury, 2003). The 462-ton barque *Eglinton* was lost on 3 September 1852 while approaching the coast of Western Australia bound for the port of Fremantle. *Eglinton* was carrying a large, diverse and valuable general cargo intended for the recently settled Swan River Colony (established in 1829) that was only partly salvaged at the time of sinking (Stanbury, 2003:5-7). The wrecksite was discovered in 1971 and excavated by maritime archaeologists from the Western Australian Maritime Museum during two short seasons in 1972 and 1973 (Stanbury, 2003:15). The *Eglinton* report provides a comprehensive artifact catalogue, complete with a large number of high quality photographs and exquisite line drawings of the remaining cargo items in particular the ceramics, glassware, ironmongery and tinware. Unlike the earlier *Sydney Cove* wreck (1797) with its Chinese export porcelain, the majority of the ceramics in the *Eglinton* cargo were British transfer-printed earthenwares. These included many of the standard mid-nineteenth-century patterns (Anemone, Canton, Rhine, Willow, Trellis & Plants, etc) made by Staffordshire potters such as Minton, Spode, Thomas Fell & Co. and Enoch Wood and Sons (Stanbury, 2003:79-130).

Stanbury places the *Eglinton* artifact assemblage in its historical context through an extensive exploration of the available historical documentation. She suggests that the ship and its cargo "could equally represent any one of a number of merchant vessels travelling to destinations in the eastern settlements of Australia at this period" which "provide(s) a fascinating indicator of the range of manufactured and consumer goods being imported into Australia" (Stanbury, 2003:33).

One important theme-based artifact study involved the detailed comparative analysis of the historical and archaeological data from four Australian shipwrecks, the *Sydney Cove* (1797), *James Matthews* (1841), *William Salthouse* (1841), and *Eglington* (1852) (Staniforth, 1995, 1996, 1997, 1999 and 2003; Staniforth and Nash, 1998). The earliest paper (Staniforth, 1995) touched on aspects of the bottles, casks and ceramics recovered from the wrecks of the *Sydney Cove* and *William Salthouse.* This paper advanced the idea that through a comparison of intact cargoes and (partial) assemblages recovered from terrestrial sites that it will be possible to reconstruct how the socio-economic status of colonists was maintained and more importantly (in a neo-Marxist sense) communicated.

Chinese export porcelain has been commonly found during historical archaeological excavations on sites dating before about 1830 in Sydney, NSW (Staniforth, 1996:16). Initial suggestions were that this was indicative of direct trade between Canton and Sydney in this period but research into shipping arrivals revealed that only two vessels actually made the direct voyage between

Canton and Sydney in the years before 1820. This trade, in fact, was carried aboard vessels involved in what was known as the "Country Trade" owned or chartered by British merchants (often Scots) resident in India and involved shipment from Canton to India (usually Calcutta) transhipment and subsequently transport to Sydney. Artifact analysis of the Chinese export porcelain component of the country trade vessel *Sydney Cove* (1797) revealed the differing forms (shape) and probable functions including teawares, toiletry wares and dinner wares (Staniforth, 1996; Staniforth and Nash, 1998).

A subsequent paper (Staniforth, 1997) focussed on late-eighteenth century notions of personal hygiene and the presence of toiletry sets, washing water bottles and associated bowls on board the *Sydney Cove* (1797). This paper examined the link (in terms of prevailing social thoughts) between personal hygiene, infectious disease, the practice of personal cleanliness and possible remedial action in the face of a hot and "inhospitable" climate (see Figure 3.3).

Overall this research was largely a work of synthesis that was conducted in order to examine "the ways in which a consumer society became established in the Australian colonies between 1788 and the middle of the nineteenth century" (Staniforth, 1999:iv). It illustrated some of the changing encoded cognitive meanings and symbology in material culture over time. It argued that such meanings came out of the desire of colonists to maintain cultural continuity through distinguishing themselves from Indigenous peoples, stabilizing their

Figure 3.3. Diver with Chinese export porcelain washing water bottle excavated from the *Sydney Cove* site (photo courtesy of the Tasmanian Parks and Wildlife Service)

relationships with their new home via familiar links (i.e. through recognizable material culture), reinforcing social order and relations, and structuring social hierarchies (Staniforth, 2003:2). This exploration of "the concepts and meanings that underlie the material world" (Staniforth, 1999:xxi) brought to light the many behaviors that were associated with the colonial expansion and colonization of Australia as well as the cultural preferences and attitudes of the colonists themselves. This research considered different aspects of the colonial experience, including cultural appropriateness, the growth of capitalism and consumerism, the cultural meaning of objects, social differentiation, and maintains that consumption plays an important role in the negotiation of social position (Staniforth, 2003:1-9). Finally the study concluded:

> The archaeology of the *Sydney Cove* is an example of the archaeology of the event. The wreck was an important historical incident in the early settlement history of Australia. However, material culture from the wreck site also represents an opportunity to incorporate the archaeology of the event into larger scale issues such as capitalism, consumption and colonisation as well as changing cultural attitudes associated with dining, tea drinking, and personal hygiene (Staniforth, 1997:163).

While the loss of vessels such as *Sydney Cove* and *James Matthews* represent the archaeology of the event it must be seen as a more significant historical impact in terms of settler history. More broadly the study of a wreck and its artifact assemblages allows an engagement with larger and longer-term issues such as translocated colonial societies, their maintenance and ultimately their engagement in global economies and information exchange networks. Staniforth concludes that: "Consumerism served to maintain cultural continuity with home territories, validate the choices of individuals...and enable the establishment, maintenance and negotiation of social relations. All of these were essential to the success of colonial settlement" (Staniforth, 2003:158).

3.4 PERSONAL OBJECTS

One of the problems sometimes faced by maritime archaeologists is being able to tell the cargo items from personal belongings. Sometimes it is the numbers of identical objects that suggests cargo while location and context can indicate the personal nature of an object or objects. "Personal objects" can be difficult to positively identify because material like clothing (buckles, buttons and fabric) and shoes that have been found on wrecksites in Australian waters including *Sydney Cove* and *Eglinton* may actually be either cargo or personal objects or even some combination of the two (Stanbury, 2003:167-177).

It is unusual, but by no means unheard of, to be able to relate archaeologically excavated artifacts directly to a historically documented individual—perhaps one the best studies of personal objects from underwater sites is Annalies Corbin's research on the material culture of steamboat passengers (Corbin, 2000).

One discrete group of artifacts from the *Pandora* site that appear to be "personal objects" are associated with the activities of the surgeon George Hamilton and came from the area believed to be his cabin (Pigott, 1995; Campbell and Gesner, 2000:91-94). These included a marble mortar showing useware on the inner surface of the bowl, a "Petit type" brass tourniquet clamp, an ivory syringe with a wooden plunger, a brass instrument case or "etui" and an assortment of medicine containers, including one small bottle that still contained traces of clove oil (Pigott, 1995:23-28). Found in association with these medical items, was a silver pocket watch signed J & J Jackson, London and numbered 9866 with a 1786 hallmark that has also been attributed to surgeon George Hamilton (Campbell and Gesner, 2000:98-99).

3.5. COLLECTED OBJECTS

Arguably the single most significant artifact found on the site of HMS *Sirius* was an edge-ground stone hatchet head. This was subsequently identified as a tool made and used by Australian Aboriginals, probably originating from the cobble beds of the Nepean River between Emu Plains and Richmond Hill, NSW. The hatchet head was "fashioned from a flattish pebble, one end of which has been ground on two sides to form a sharp cutting edge" (Stanbury, 1994:86). It has been suggested that this item "could well have been part of the collection of "curiosities" of an officer on the *Sirius*" (Stanbury, 1994:87).

"Collected" objects are of considerable interest for what they tell us about cultural interactions between the "West", in this case in the form of British exploration vessels and their crews, and the "Other", in the form of the Indigneous inhabitants of Australasia and the Pacific. "Artificial curiosities" or collected objects have values in the domains of scientific enquiry, collector networks, exchange systems and cementing of patronage relationships that were so much a part of eighteenth century European "exploration" of the Pacific. Obviously the voyage of HMS *Pandora* through the Pacific in search of HMS *Bounty* and the infamous mutineers provided the ideal opportunity for the officers and crew to collect Pacific "curiosities". The resulting material culture exchange resulted in the voluminous assemblage of Polynesian artifacts that have been recovered from the officers' quarters in the stern of the vessel (Campbell and Gesner, 2000:128-131; Coleman, 1988a:43-48).

One of the more detailed studies of an assemblage of collected objects from the excavation of HMS *Pandora* has been produced by Tom Fallowfield (2001). This study was of the Polynesian fishing tackle including fish-hooks, fish lures and octopus lures. What stands out in Fallowfield's detailed analysis (above issues of function, style and trade) is a consideration of how the significance of the collection may be assessed. He contextualizes this discussion with reference to the stimulation created by the accounts and illustrations from the Cook Voyages to the Pacific and the growth of the infant science of anthropology, and the seminal role played by Sir Joseph Banks. Collected objects were "initially brought together as the result of the contact between two

ethnic groups...during a specific and well documented historical period of contact" (Fallowfield, 2001:26). In contrast to other voyages of discovery where the collections were often distributed with loss of associated data, this assemblage represents the artifacts in their original collection and stowage state. Fallowfield concludes by noting that it would be highly desirable to locate further historical archival evidence for relationships between collectors and members of these collection voyages. He suggests that "some light would be thrown on collecting strategies should a study of the range and variety of Oceanic artifacts show any indications of a structured approach" (Fallowfield, 2001:26).

Another study of collected objects from HMS *Pandora* involved five Polynesian war clubs, believed to be of Tongan origin (Campbell, 1997; Campbell and Gesner, 2000:133-134). Despite being the principal weapon in Tongan warfare in the late eighteenth century, the pristine condition of the club heads suggests that their primary purpose was, in fact, ceremonial (Campbell, 1997:7). The clubs were found together lying parallel to the side of the vessel in the area of the vessel considered to be the cabin of First Lieutenant John Larkan. Also found in close proximity was a lead name stamp bearing the letters "LARKAN" in mirror image that had clearly been used as a stamp (Campbell, 1997:7). This is a case where the category of personal object meets that of collected object and tells us something about the type, quality and quantity of artificial curiosities that a relatively high status individual like Lieutenant Larkan could manage to obtain during the voyage (Gesner, 2000:56-57).

The final case study of collected objects from HMS *Pandora* involves a group of 37 artifacts identified as likely to have come from a Tahitian mourning costume (Illidge, 2002). The main components included pearl shell slivers probably from the mother-of-pearl apron, whole pearl shell from the face mask, breast plate or a pair of clappers, a coconut disk from the coconut disk apron, shark's teeth probably from a club and part of either the headress or the breast plate. When discussing the cultural context of the mourning costume, Illidge (2002:68) has suggested that: "At the time of early European exploration in the Pacific, Tahitian mourning costumes held extremely high value to both Polynesian and European visitors alike" albeit for some very different reasons. For the Polynesians, in addition to its spiritual significance, there was a vast amount of time and labor invested in creating such costumes while for the Europeans there was the potential for a substantial monetary return providing it could be successfully transported back to Europe.

It is not only in "collected" objects that cultural interactions and exchanges are revealed as artifacts from the *Foam* have indicated. The topsail schooner *Foam* was involved in the Pacific labour trade shipping Pacific islanders to Queensland to work in the sugar cane industry and was lost in 1893 after leaving Queensland for the Solomon Islands. The wrecksite was relocated in 1982 and a rescue excavation by maritime archaeologists at the Queensland Museum recovered about 40 ceramic armbands (Gesner, 1991a; Beck, 1999). These ceramic armbands turned out to have been made in Europe as copies of the traditional shell armbands that were treasured by Pacific islanders for body

decoration and used in exchanges. European copies were introduced into the Pacific in the latter part of the nineteenth century and were used as trade goods to purchase the services of Pacific islanders for work in the cane fields.

3.6 JETTY SITE ARTIFACTS

In addition to studies of the construction and actual structure of jetties, Australian maritime archaeologists have been involved in studies of the artifacts that are commonly found on the seabed around jetty structures over the last two decades. The earliest assemblage of artifacts to be archaeologically excavated came from the Fremantle Long Jetty excavation conducted by Mike McCarthy of the Western Australian Maritime Museum in 1984 (McCarthy 1987, 2002). This was a case of mitigation work (or rescue archaeology) arising as a result of plans to build a new marina in the vicinity of the Fremantle Ocean (or Long) Jetty built in 1872 and demolished in 1921. The vast majority of the material raised was ceramics, glass and cutlery, some bearing the markings of well-known shipping companies such as the Adelaide Steamship Company, the Australian Steam Navigation Company, Howard Smith and Huddart Parker (McCarthy, 2002:12). The material dated from about 1840 to 1920 and, like many historical archaeological sites, represented a wide range of the types of objects that were either lost or deliberately thrown away (as rubbish) over a considerable period of time but managed to survive in an archaeological context.

Artifacts excavated from the Holdfast Bay Jetty at Glenelg in South Australia have been examined as part of an Honours thesis (Rodrigues, 2002a, 2002b) and artifact patterning on the seabed considered by another Honours student at Flinders University (Lewczak, 2000; Richards and Lewczak, 2002). In the 1970s the Society for Underwater Historical Research (SUHR) carried out salvage excavations on the site of the Holdfast Bay Jetty that was built in 1859 and demolished after a storm in 1948. This original work had generated more than 5,000 artifacts in total, weighing more than 80 kg. These artifacts lacked contextual information as a result of inadequate recording at the time and thus demonstrated the vital importance of spatial control in underwater excavations of jetty sites (Rodrigues, 2002a:34). A smaller-scale excavation employing *Site Surveyor* software to establish an accurate position of objects on the seabed was conducted by SUHR in 2000 (Richards and Lewczak, 2002). This work focussed on site formation processes and revealed information about artifact patterning on the seabed indicating changes to the sand levels. It was concluded that from time to time all of the sand cover was removed as a result of storm, seasonal or longer-term changes resulting in all of the artifacts – no matter what their size or density – ending up on the underlying limestone seabed.

3.7. CONCLUSION

This chapter has considered the analysis of artifacts from shipwreck and other underwater archaeological sites such as jetties. It suggests that maritime archaeologists need to consider the possible meanings of things. It also argues that cargo artifacts can reveal ingrained cultural behaviors and attitudes that demonstrate cultural continuity between the parent culture and the translocated colonial culture, at least in the early years of settlement. Material culture is used by people for individual, psychological reasons such as to reassure themselves about their place in the world, to validate choices and to make themselves happy. Colonial settlements were dependent on supplies of consumer goods carried by sea that allowed newly arrived immigrants to establish themselves within a consumer society. These objects helped immigrants to confirm in their own minds that they had made the right choice when they decided to undergo the difficulties and dislocation associated with nineteenth century migration. Finally artifacts were, and are, actively used in the establishment, maintenance and negotiation of social relations, and insights into the nature of cultural exchange can been seen, for example, in the types, quality and quantity of collected objects found aboard HMS *Pandora.*

Chapter 4

Thematic Studies in Australian Maritime Archaeology

Nathan Richards

4.1. INTRODUCTION

Many underwater and maritime archaeological sites are representative of larger-scale themes and contribute to our understanding of themes in Australian or worldwide history. Thematic approaches to underwater sites are an important step away from site-specific, particularistic studies towards more generalizing and anthropologically focussed studies. This chapter considers the themes of Australian shipbuilding and abandoned vessels as case studies.

Australian researchers have engaged in theme-based, regional and generalist maritime archaeological and historical studies since at least the 1980s with the pioneering work of researchers such as Leonie Foster in her four-volume work, *Port Phillip Shipwrecks: An Historical Survey* (Foster, 1987-1990). This has been emulated in a number of similar publications, and such works have served as a solid foundation for the continued development of specific theme-based studies. These have been associated with issues as diverse as the Dutch East India Company and seventeenth century trade, Australian shipbuilding, immigration, cultural landscapes, shipwreck survivor camps (see Figure 4.1), the development of consumer society and the deliberate discard of watercraft. The hallmarks of such research can be seen predominantly in its generalizing potential, facilitated through its ability to synthesize large amounts of data from a sizeable number of sites, and resulting in the capability to communicate issues of national and international significance. Such studies are also good examples of the evolution and the development of new theoretical and methodological tools in Australian maritime archaeology.

These studies are also important for other reasons. To begin with, theme-based research represents a challenge to the traditional theoretical orientation of maritime archaeology in Australia, which has tended to be predominantly of an historical particularist orientation (Green, 1990:235; Veth and McCarthy, 1999:12; McCarthy, 2000:1,191-192) lacking what Staniforth (2000a:90) has termed "theoretical sophistication." In contrast, thematic studies, although sometimes not explicit in their theoretical approach, have consistently undergone an advance in relation to their complexity and depth. This transition is noteworthy because it has not been characterized by the creation of a monolithic, reactive and rigid anti-particularist stance, but rather by the development of a number of diverse and flexible theoretical positions.

Figure 4.1. Research excavation of the *Sydney Cove* (1797) survivors' camp, Preservation Island, Tasmania (photo courtesy of the Tasmanian Parks and Wildlife Service).

4.2. THEME AND THEORY

The growth of theme-based archaeological research in Australian maritime archaeology can be seen as a consequence of a number of homegrown and foreign influences. It is within the discussion of researchers such as Lenihan and Murphy (1998:234), concerning the lack of explicit research methodology and design, problem-orientation, and theoretical inclination that we see the impetus for the transition to thematic approaches in maritime archaeological research. Generally, however, the growth of thematic studies, and what could be called "the thematic philosophy" is grounded specifically within the debate

about historical particularism, or "over-particularisation" within maritime archaeology (see Gould, 2000:12; Martin, 2001:383). McCarthy has suggested that early Australian maritime archaeological projects were historical particularist in orientation. This approach, focussing on assemblages from particular sites came about because of the youth of the discipline, as well as the unknown nature of the artefact resource (McCarthy, 1998a:33).

The release of Gould's edited volume *Shipwreck Anthropology* (1983) is cited by researchers as a watershed in Australian maritime archaeology (see McCarthy, 1998a: 33-34; Staniforth, 2003:18-19). As suggested by Lenihan (1983:43-44), Australians were often categorized with the "British" school of archaeology, and therefore were cited as demonstrating "little interest, for the most part, in human behavioral problem" and operating "totally without benefit of any demonstrable, explicit research designs, much like the classical archaeologists". Lenihan talks at length about the concentration on technique, and lack of research-orientation or nomothetic study in maritime archaeology (Lenihan, 1983:49-50). Indeed, *Shipwreck Anthropology* can be credited as being the beginning of a major transition in Australian approaches, in particular a "questioning of existing research approaches and a call for a broader theoretical base to shipwreck studies". This alternative philosophy can be seen as the foundation of thematic studies in this nation. Since that time, historical particularism has both been defended (see Bass, 1983:91-104; Green, 1990:235) as well as avoided, or responded to by Australian and overseas archaeologists (see Marken, 1994; Rednap, 1997; Crisman and Cohn, 1998; Souza, 1998; Staniforth, 2003) in order to seek alternative theoretical frameworks.

One of the pervasive ideas that has interwoven itself into thematic studies, as noted by Murphy (1983:67), is that "Shipwrecks have ... been described as microcosms of a particular maritime society". This microcosm is rarely understood if a particular wreck is studied without some degree of comparison, and this realization is what spurs researchers into moving towards more generalized, thematic and comparative research. This, in part is also an answer to the call of Murphy (1983:69), that "The archaeology of shipwreck should not merely be the embellishment of the maritime historical record, by the elucidation of otherwise unattainable aspects of maritime behavior". Murphy (1983:75) also notes that examining "the diachronic aspects of shipwrecks from a processual perspective leads to problem orientation and to hypothesis formulation and testing". Such assertions may be seen as common threads within Australian thematic studies.

In 1983, Watson was critical of nomothetic researchers, suggesting that there seemed to be no good published examples of nomothetic studies (Watson, 1983:28). Since that time, however, Australian thematic researchers have consistently demonstrated that themes within maritime archaeological research are very much like the "orderly universes of archaeological data" discussed by Watson (1983:25), and can furnish data sets as equally capable of asking and answering important questions about the past as site-specific research. In the end, the argument for the increased use of thematic analytical method is somewhat similar to the issues discussed by Veth and McCarthy (1999:12)

concerning "research which aims to create both general and predictive models about nautical behavior". So too, thematic analysis can be seen to fit into the tension cited by these authors between processualists and post-processualists, particularists and nomothetic researchers, with thematic analysis fitting better into the latter category in both instances.

4.3. THE MECHANISMS OF THEMATIC STUDY

Although we can see the growth of thematic analysis as largely arising within the context of a reaction to historical particularism, it is also clear that all thematic studies have from some perspective emerged and been dependent on foundations set by historical particularism. As explained below, some site-specific studies have successfully undergone a transformation from the particularist to the thematic, where the *theme* emerges from ideas about a particular *site,* or a carefully selected number of sites. Under other circumstances, themes have emerged from the extrapolations of a large number of sites categorized in extensive lists, registers and databases.

One example of the "theme from site" approach is the work undertaken by the Western Australian Maritime Museum since 1963 on the Dutch East India Company (VOC) vessels, *Batavia* (1629), *Vergulde Draeck* (1656), *Zuytdorp* (1713), and *Zeewijk* (1727). The realization in the late 1980s that the 24 East Indiamen wrecks (of Portuguese, Dutch, and British origin) found around the world were a small portion of such losses was seen as the perfect opportunity to extend site-based research into theme-based study focussing on seventeenth and eighteenth century commerce, with particular emphasis on the Dutch. In particular, Green (1987b:168) has noted that, "The preponderance of Dutch wrecks reflects the vigor with which the Dutch tried to dominate trade to the east". In particular, the theme of East Indiamen and the comparison of navigational instrumentation discovered in the artefact assemblages of *Batavia* (1629), *Kennemerland* (1664), and *Hollandia* (1742) not only shed light on the development of VOC navigation practices and the degree of resistance to the adoption to new technology in the company, but illustrates the benefits of diachronic global thematic approaches. Such discussions set into regional analyses have also shed considerable light on the context of Eastern history within which Australian history is invariably connected. In this way, the analysis of seventeenth century Dutch trade led directly to the history of shifting Asiatic trade patterns, Europeans in the Indian Ocean, as well as many other specific themes in European and Eastern history (Green 1987a:152).

Another example of this approach is the SS *Xantho* project. In particular Veth and McCarthy's analysis (1999) of the vessel from processual and post-processual viewpoints reinforce that it is via an explicit theoretical paradigm that we can extend shipwreck history into shipwreck anthropology. Veth and McCarthy examine the use and loss of the *Xantho* in relation to themes such as frontier technology, capitalism, and entrepreneurial expansion. Here the use of themes can be seen to arise from the need of researchers to create a greater

contextualizing potential for their sites. This can only come about through the identification of commonalities between sites, and the understanding of obvious dominant themes within their subject matter.

Somewhat different from the approach outlined above is the "theme from database" approach. Fundamentally, whatever the inspiration for a project, the basis of a thematic study is never "the site", but is instead "a database of sites". As Duncan (2000:1) points out, Australian maritime archaeologists, though largely historical particularist approaches have created databases of maritime heritage items since the 1970s. It is these databases, and others like them, which, whether examined for regional synthesis or national analysis, that have served as both the framework and dataset for nomothetic analyses in Australian maritime archaeology. In the words of Duncan, these databases were important because, "The union of state regional databases enables regional and thematic studies that transcend artificial administrative boundaries that may often not reflect actual cultural utilization areas" (Duncan, 2000:4-5).

The ability to carry out regional and thematic studies has arguably been based in the precedence set with state heritage databases, and the establishment and usability of the Australian Historic Shipwrecks Database (AHSD). Initially such databases allowed for analysis to be undertaken on a range of isolated fields such as rig, construction, and tonnage (to name a few), but now they have ever-increasing capabilities to analyze and cross-reference shipwreck data. Such studies are also often the legacy of historical particularist work as they are a consequence of the compilation of historical and archaeological research into lists, registers and databases. These studies have tended to represent a more explicit attempt at the exploration of theme. These studies can be divided into two types, according to their emphasis on either region or theme.

4.4. THEMES AND REGIONS

Although it has not been largely acknowledged in the past, thematic and regional studies in maritime archaeology are fundamentally the same, with variations attributable to differences in the goal of research, and the degree to which "theme" or "region" is concentrated upon. Duncan (2000:7), a proponent of regional studies, suggests, "thematic studies de-emphasize the other larger portion of shipwrecks not contained within the theme, in addition to ignoring the overall significance of the total distribution". Although Duncan sees regional studies as an alternative to thematic studies, they can actually be seen as derivations of the same approach. This is easy to understand, as all such studies are exclusionary by their very nature. Practically, even the largest collection of candidates for study will be incomplete. Furthermore, without exception, thematic and regional studies both exist within defined spatial boundaries, whether explicitly stated or not. In essence, even thematic studies are regional in nature and site selection strategies must be in place for practical reasons.

The first type of theme-inclined research can be defined as a "regional approach". This occurs where the theme emerges from a selection process that

is determined by the institution of artificial boundaries on a regional scale. Themes are selected secondarily to the imposition of regional boundaries, and such studies come about because of the desire to better understand the processes and events occurring within a particular region. Over the years state and Federal heritage agencies have sought to understand their resource better by delineating manageable regions in which a more complete understanding of what that region contained emerged. As many such reports have been written, only examples of major transitional examples have been included below. It should also be acknowledged that the development of multi-layered, thematic methods of site significance assessment within Australian cultural heritage management have also had considerable impact on the exploration of themes, and the commencement of thematic projects (see Clark, 1988; Nutley, 1990; Marquis-Kyle and Walker, 1992; Edmonds et al., 1995).

The first example of a theme emerging from a database on a regional level is Foster's collection of geographically defined historical surveys of the wreck resource in Port Phillip, Victoria (Foster, 1987-1990). Foster's work is cited as a defining moment in thematic studies in Australian maritime archaeology because of "her argument that it is necessary to select themes in Australian history and to work from these historical themes towards those maritime archaeological sites which may have the potential to contribute to our knowledge of that particular theme" (Staniforth, 1991:22). Foster concerned herself with the identification of themes, and the quantification of historical data in order to provide a greater contextual potential for that resource. Foster applied the data from the known, and discovered historical sources regarding the wreck sites to a range of analyses, including: incidence of wreck events; propulsion; rig and construction of vessel; country of origin; function of vessel; reasons for loss; and location of wrecks. Through the interpretation of these datasets, she was able to contribute to the understanding of particular historic events (such as the Victorian Gold Rushes of the 1850s), as well as discuss and draw general conclusions concerning a number of pertinent historical themes. These included Australian-British ties in the colonial period, trading patterns, industrial relations, trade development, social change, defense, nineteenth-century immigration, technological change, economic expansion, gender issues, and government policy.

Previously, regional shipwreck analyses only existed as compiled shipwreck histories by authors such as Bateson (1972) and Loney (1971). Such works, although often useful historical resources, had very little analytical potential due to the lack of comparative methodology. The legacy of Foster's work was the expansion of shipwreck gazetteers produced by Australian maritime archaeologists from printed database records and descriptive synopses, to increasingly analytical works. The structure and content of Jordan's aptly named *East Coast Wrecks: A Thematic Historical Survey* (1995) is one such example of the ramifications of the work in Port Phillip Bay. Jordan additionally notes the other ramifications of Foster's thematic approach with the establishment of maritime heritage trails, and increased community involvement (Jordan, 1995:7). Her thematic approach was to take the broad historical themes

defined by Edmonds et al., (1995) in the *Historic Shipwrecks National Research Plan* and apply them to the Victorian wreck resource. This approach culminates in the utilization of the wreck resource as a set of data, rather than as isolated events. The end result of this approach is an easily understood and enriched historic context, within which the maritime archaeological resource could be understood and further contextualized.

Following Foster, Duncan (2000: 8) cites the work of Kenderdine on the River Murray (see Kenderdine, 1993a, 1993b, 1994a, 1994b, 1994c) as the next significant change in the regional investigation of shipwrecks. Kenderdine adopted a number of Eurocentric themes with which to explore the development and transformation of the areas surrounding the River Murray. These themes allowed her to examine issues relating to navigation of the waterway, trade dynamics, the establishment of major ports, the use of the landscape, and the regulation of river vessels. With this understood, sites could be placed in greater contextual understanding, and indeed be utilized to contribute towards this understanding. In 1994, Kenderdine extended and substantially expanded this study from South Australia to the adjacent states of Victoria and New South Wales. The new project was able to look at similar themes as well as investigate issues of interstate rivalry, and economic decline.

Kenderdine's (1995) study of shipwrecks in the Perth region of Western Australia is another example of the evolving thematic basis to regional analyses in shipwreck archaeology. Kenderdine not only includes historical and archaeological research on 38 shipwrecks but also combines them into a range of temporal and functional analyses. In the end, the goal of such analysis is to see the wreck resource in relation to technological change and trading patterns so as to be able to fit local, regional or national historical context into a global perspective. Here something becomes apparent. Thematic researchers seek to make the wreck resource in question a *representation* of regional economic, social and technological change in order to answer questions. In this case Kenderdine's analysis (1995:199-208) would focus on technological change, as evidenced by changes to the rig and tonnage of sailing vessels, hull construction materials, ports of construction. An example of the increasing sophistication of the comparative methods and analyses in regional studies, Kenderdine attempts diachronic analyses of decade of construction and length to depth ratios by decade (Kenderdine, 1995:207). This is something that was further expanded in the work of researchers such as Doyle (2000) and Richards (2002).

The last example of a regional study can be seen in the work of Coroneos (1997) and Coroneos and McKinnon (1997). These reports begin with a thorough outline of the climate and weather, geomorphology, hydrography, and biology of the region. They then consider a broad historical view of the occupation of the land as well as the development of industry and trade patterns, transportation and shipping infrastructure. This is followed by an extensive methodology, which communicates strategies, sources and problems with the research. Following the descriptive section on the wrecks themselves, the sites, and subjects converge into an analysis and discussion of the resource. Similar to Foster, Coroneos considers wreck incidence, distribution and cause of loss

before proceeding into a discussion that considers the social, technological and economic causes, consequences, and representativeness of the shipwrecks in the region. The emphasis of such analyses has an undeniable focus upon the reconstruction of hitherto unexplored aspects of economic history, focussing upon the degree to which information about past trade networks could be uncovered through wreck incidence. As stated by Coroneos: "Most publications on shipwrecks look, at the "how", "where", "when", and "what" of a shipwreck; the archaeologist goes further and asks, "why"?" (Coroneos and McKinnon, 1997:xi).

In probably the most developed example of a regional-thematic study, Duncan (2000, 2004) uses the twin, teamed themes and concepts of risk (emerging from structuration theory) and cultural landscape/seascape as a device to explain spatial patterning in the Gippsland Region of Victoria, Australia. In many ways, Duncan's analysis of the Gippsland shipwreck resource can be seen as a natural extension to many of the regionalist works already mentioned. This can be seen in Duncan's consideration of many of the issues and themes defined by researchers such as Foster, Kenderdine and Coroneos, such as settlement history, shifts in the mode of transportation, and economic industrial trends. Moreover, its emphasis on theory and use of theme is an important step in the increasing sophistication of regional and thematic analysis alike. Duncan demonstrates concrete links between historical, archaeological and toponymic evidence, and in doing so discusses many issues, such as the role of economics on risk-taking behavior, the way that landscape may reflect a reaction to wreck incidence, and the role of local knowledge in defraying wreck incidence.

4.5. THEMATIC CASE STUDIES

The second type of theme-inclined research can be defined as a "thematic" approach. This occurs where the theme emerges from a selection of a database for its appropriateness to a thematic category. Such selections are normally defined within some region, but the imposition of regional boundaries is secondary to the theme itself. Such studies come about because of a desire to understand a particular theme. The selection process can be seen to be regional due to practical issues of data management which dictate that all sites relevant to that theme, are either not known, not understood enough, or too large to handle. Consequently, a region is invariably discernible whether defined or not.

One of the dominant types of study here has been the examination of Australian ship-building by researchers such as Jeffery, Coroneos, and O'Reilly. In 1982, Jeffery picked up on the theme of Australian-built vessels wrecked in South Australia. Like other theme-based research at the time, this initiative came out of the investigation of a single vessel, the Tasmanian-built *Water Witch* wrecked on the River Murray (Jeffery, 1987a). The discovery and investigation of the cutter spurred researchers into asking questions related to Australian ship construction, at that stage a theme that had not been extensively explored. Concentrating on 84 Australian-built vessels wrecked in South Australia from

1840 to 1900, Jeffery looked at use-life analysis, length to breadth and breadth to depth ratio (Jeffery, 1989, 1992). Investigations of the South Australian resource were able to suggest hypotheses concerning the economics of trade and shipbuilding in Tasmania, which supplied most of the South Australian vessels. Jeffery was also able to suggest that the length of career of the Tasmanian craft increased through the nineteenth century, and as rig-types changed, vessels became more specialized and the drafts of watercraft decreased (Jeffery, 1992:217).

Although Jeffery indicates some concern with his results due to the sample of vessels that he utilized, it is clear that the adoption of a thematic approach invariably leads the researcher to ask very specific questions, and attempt to answer them. In the process a debate about Australian maritime history using the maritime archaeological record could be created. As Jeffery notes, this also allows research to be directed at other shipwrecks in order to contribute to the answering of unanswered questions, vessels that may or may not have been targeted before, or indeed, may not have been considered as significant as before.

Jeffery's study of Australian-built vessels wrecked in South Australia uses a number of variables including—name, where built, builder, date built, date wrecked, where wrecked, rig, tonnage, length-breadth-depth ratios, coefficient of underdeck tonnage, construction and stern types, and industry employment (Jeffery, 1989:51). The identification of the potential of these variables, and their possibility to answer questions about Australian shipbuilding were an important step in the development of nomothetic methodologies in Australian maritime archaeological research. This was used in a very broad assessment of the potential of the South Australian shipwreck resource that included comment on the development of the coastline, the growth of alternative transportation, and technological development. In the end, such a study helps to stimulate debate about maritime behavior, the quality of Australian-built ships, shipwreck events, trade, and the coastline as a structured representation of human activities on the sea. Jeffery's research concluded that research into Australian ship-buolding "has the potential to answer questions about the design, suitability, construction, maintenance and fitting out of the "typical" vessel" (Jeffery, 1989:54).

In a similar study, Coroneos (1991) examined the short working lives of early Australian wooden sailing vessels in Victorian waters. This study originated from work on the Australian-built schooner *Clarence* (Harvey, 1987, 1989), which recommended that more research into the Australian shipbuilding industry be pursued. The model for the answering of these questions was based upon the aforementioned work of Jeffery, and a similar database of sites was collated. In this case, the large number of vessels in the dataset, and the employment of comparative methods allowed Coroneos to examine questions of vessel lifespan, and assumptions by historians that faulty construction, lack of durability, poor seamanship and inadequate equipment played a role in wrecking events. The study demonstrates that the short working lives of locally built vessels, when compared to foreign built vessels, was not due to inherent

deficiencies in their construction, but the servicing of hazardous secondary ports on the Victorian coast. Coroneos (1991:14) suggests that: "Through the analysis of historical sources this paper has demonstrated that the high losses of Australian-built shipping in Victoria between 1836-45 was not primarily due to faulty construction. Consequently this fact has led to the alternative interpretation of the archaeological record which proposes that early Australian-built vessels were constructed with the intended purpose of short working lives."

Another example of comparative archaeological research can be seen in a study by O'Reilly (1999), which concentrated on the materials and ship construction methods of vessels built between 1850 and 1899 operating the South Australian intrastate trade. The study compared the material remains of wooden sailing vessels in an assessment of cultural continuity and cultural adaptation in ship design and construction. Also related to these studies is Doyle's (2000) analysis of shipwrecks at Townsville, Queensland. In this regional study, behavioral issues are a major component, in particular the relationship between the loss and discard of vessels and historic events. The major analysis undertaken here was the frequency of loss over time using standard statistical analyses (in this case the Kolmogorov-Smirov Test of Uniformity). Doyle's regional, theoretical and selectively thematic approach suggests that there is a correlation between changes in the rate of loss and discard, and the movements in levels of trade in the Townsville region.

An underlying philosophy of all of these studies is their explicit focus on behavioral issues, and their avoidance of emphasis on particular (singular) sites. In an amalgam of these approaches Richards (2002) has looked at the theme of the deliberate abandonment of watercraft. In an initial study of a ships' graveyard at Garden Island, South Australia (Richards, 1997, 1998), the theme of ship discard was used to suggest that there was a correlation between discard events and issues of technological diffusion and change. The theme of abandonment allowed Richards to deduce the order of deposition of watercraft, and to show that vessel type, hull material, and propulsion, and legislative changes influenced the logistics of ship discard. Lifespan analysis was also used as a tool to discuss the ramifications of modification, conversion and reuse in watercraft. The study at Garden Island was able to show links between the discrete collection of vessels at the site, and national and global historical processes and events, such as technological innovation, changes in world shipping routes, periods of economic growth and depression, world war, and changes in transportation method.

The Garden Island research was subsequently expanded to a national scale utilizing a much enlarged database of over 1,500 vessels, and with observations from 120 maritime archaeological sites (Richards, 2002; Richards and Staniforth, in press). The study explored the causal mechanisms between landscape, economic trends, regulatory frameworks and cultural site formation processes associated with harm minimization, placement assurance, salvage, and discard activities. A similar project in Tasmania (Richards, 2003a) used the discarded vessel database to analyze temporal, spatial and historical factors involved with discard processes and related them to various aspects of cultural

Figure 4.2. Garden Island ships graveyard in South Australia (photo courtesy of the Department of Archaeology, Flinders University)

change. The state-wide analysis of the Tasmanian abandoned ship resource used over 120 examples to carry out monochronic and diachronic analyses of discard incidence, lifespan, use, design, and technology, and how they relate to and may redefine Tasmanian economic, technological and cultural events and processes.

A more regionally focussed discard study, at Strahan, Tasmania (Richards, 2003b) demonstrated that even a small collection of wrecks (9 sites) may provide some insight into the cultural site formation processes at play in isolated regional economic centers. A relationship between economic activity and ship discard areas exists in both a historical and legislative sense, and an archaeological sense. Although many of these processes are similar the world over due to global economic and technological phenomena, there are still regional variations that may be read from archaeological and historic sources. Isolation from markets and services is a major contributor to the formation of sites. The study also shows how archaeological site formation is itself an end-stage product of a number of technological, economic and cultural processes rooted in the behavior of local communities. Within this theme of "isolation", apparently unconnected archaeological remnants find an increased degree of connection and significance. A similar study in the Northern Territory shows that the types of abandoned sites, their year of discard, and their spatial distribution are intimately linked with a cornucopia of historical events outside of, and within national boundaries (Richards, 2004).

Not all thematic studies have been based in the analysis of watercraft remains. Thematic studies concentrating on material culture (artefacts) have also been carried out in Australia and a number are considered in more detail in Chapter 3. In his 1991 paper Peter Gesner concentrates on the class of vessels engaged in the nineteenth and twentieth century Pacific labor trade, with particular emphasis on the Queensland labor trade. Gesner justifies this in relation to the "poorly researched aspects of the trade," and "serious weaknesses and gaps in our knowledge of the labor trade" (Gesner, 1991a:15). Gesner identifies the gap in knowledge and then explicitly asks: "What new or revised picture might emerge after the study of the archaeological record?" His engagement with the theme directed his research in such a manner that he could determine that there were six vessels wrecked in the vicinity of the Queensland coast that were engaged in the labor trade and allowed him to concentrate research efforts into particular wrecks (Gesner, 1991a:17). In particular the broad thematic approach, and understanding of the historiography of the subject allows Gesner to put classes of artefact, such as the ceramic armbands found on the wreck of the *Foam* into greater contextual understanding (see Beck, 1999).

4.6 THE POTENTIAL OF THEME-BASED RESEARCH

The archaeological potential of theme-based research within maritime archaeology is immense. Although the research described here has been based within Australian historical contexts, the ramifications of the transferral of these methodological and theoretical innovations and developments to other historical contexts has considerable (albeit largely untested) potential. This is often expressed implicitly within research. One example of this has relevance to the historical archaeology of other colonized nations such as South Africa and Canada (and indeed the global economy), through the tracing of artefact trajectories across trading networks (Staniforth, 1995, 1996, 2003). In essence, the use of theme enables material culture studies to move beyond descriptive and functional analysis and into the realm of meaning. Such potential may also be said of many of the other cited works.

Thematic research also challenges the view of shipwreck as time capsule. Instead of viewing individual wrecks as representative of events in time (synchronic), they have been increasingly seen as a database from which historical processes can be assessed and redefined (diachronic). Although it may not always be the intention of the researcher undertaking comparative, diachronic analysis to be non-particularistic, the end product is a kind of framework against which similar sites can be compared and assessed. As theme-based research is context-rich it is more conducive to the expansion of research into issue and debate, whose long-term goal is the facilitation of discipline-wide growth and development.

Thematic studies lend themselves to comparison, multi-disciplinary studies which facilitate the cross-fertilization of numerous disciplines. As noted by Staniforth (2000:90) there are increasing links between historical and

maritime archaeology. Of particular note are a number of joint maritime and historical archaeological conferences that have been held in Australia (1995, 2000, 2002, 2004), the AWSANZ Project on whaling sites (Lawrence and Staniforth, 1998), and collaborative projects conducted in Western Australia such as the Australian Contact Shipwrecks Program (Silvester, 1998; McCarthy and Silvester, 2000).

4.7. CONCLUSION

Theme-based research has the advantage of shifting focus from the "site" to the "idea". For this reason, thematic studies represent an addition to the theoretical toolbox of maritime archaeology, and offer an alternative to the still predominant historical particularism of the discipline in Australia. They are also an important step towards the integration of maritime archaeology into the mainstream of terrestrial archaeology as well as an indication of the originality and innovation of maritime archaeological researchers. Such developments do much to widen the respectability, legitimacy and acceptance of the sub-discipline amongst its parent tradition, and it could be said that the growth and increasing sophistication of thematic studies in this country is a part of this broadening trend. In conclusion the author agrees that: "The time has come for anthropologically oriented archaeologists to approach shipwrecks as a data base for the study of human behavior" (Murphy, 1983:89).

Thematic research is just one method contributing to the evolution of archaeology, a development often touted as an unfolding battle between processual and post-processual approaches. As Gibbins and Adams (2001:285) have suggested: "The inclusiveness of post-processualism, a statement of increased theoretical receptiveness rather than a defined methodology, could be seen to encompass much of the third direction identified here". Although conceivably belonging to a parent philosophy, the thematic approaches represented by the cited works can also be said to represent broad (and often opposing) theoretical perspectives and methodologies that may herald the transformation of the discipline into one reflecting increased diversity and dynamism.

Chapter 5

Individual Shipwreck Site Case Studies

Michael Nash

5.1. INTRODUCTION

Over the past thirty years Australian maritime archaeologists have been involved in the recording of hundreds of shipwreck sites around the country and overseas. Since the loss of the *Trial* in 1622 there have been approximately 7,500 documented shipwrecks in Australian waters and the locations of around 1,000 or 13% of these wrecks are currently known. Although not all these sites are significant or protected under legislation, shipwreck management agencies in each state and Territory have carried out extensive programs of inspection and survey as part of their operations (McCarthy, 1982; Nash, 2003a). More detailed recording and test excavation have also occurred where sites were regarded as either particularly significant or threatened. Long-term archaeological projects, including large-scale excavations, have been more restricted in number due to the constraints of funding or organization. Hosty and Stuart (1994) have outlined how the development of maritime archaeology in Australia was first concentrated on the recording and excavation of Dutch East India Company shipwrecks by the Western Australian Maritime Museum. This pioneering work was then extended to the excavation of colonial period wrecks such as the *Rapid*, *James Matthews*, *Eglinton* and SS *Xantho* (Henderson, 1986:79-127).

The later development of maritime archaeological programs in other Australian states followed a similar pattern; high profile projects and excavations on some individual sites combined with broader survey and inspection programs. Major projects have included the excavations of the *Waterwitch* and *Zanoni* in South Australia (Jeffery, 1987a, 1987b, 1988), and the work on the PS *Clonmel*, *William Salthouse*, *Clarence* and SS *City of Launceston* in Victoria (Harvey, 1989, 1999; Staniforth, 2000b; Strachan,

2000a). This chapter will focus on three case studies of excavated shipwreck sites in Australian waters from the late eighteenth century – the *Sirius* (1790), *Pandora* (1791) and *Sydney Cove* (1797) (Henderson, 1986: 33-44). All three shipwrecks occurred within the first decade after the establishment of European settlement and they are considered to be highly significant for their historical associations alone. The material culture of the sites is also extensive, and this combination of attributes provided the rationale for detailed research and excavation programs. An examination of the context, organization, planning and funding of these case studies provides a valuable insight into the approaches taken to major shipwreck projects and the development of Australian underwater archaeology in general.

5.2. THE HMS *SIRIUS* PROJECT

The earliest of these shipwrecks, HMS *Sirius*, was the flagship of the "First Fleet" that sailed from Britain to Australia in 1787 to establish the first European colony at Port Jackson (Sydney), New South Wales. Originally built as the 511 ton Baltic trader *Berwick*, the vessel was purchased by the British Navy as a storeship then later refitted and commissioned as a sixth rate 20-gun frigate. The *Sirius* was the largest vessel attached to the New South Wales establishment and was used extensively for the transport of badly needed stores and equipment from other British colonial ports. In 1790 the *Sirius*, under the command of Captain John Hunter, and the armed tender *Supply* were despatched with 275 convicts and marines to the British settlement at Norfolk Island, 1,500 kilometres north-east of Port Jackson. On 19 March the two vessels became trapped at a difficult anchorage in Norfolk Bay and the *Sirius* went ashore without loss of life. Despite all attempts to lighten the ship it was driven further on to the reef, where a considerable quantity of stores and supplies were salvaged using convict labour. Some of the heavy cannon were recovered from the wreck as late as 1791 and the hull did not entirely disappear for almost two years (Henderson and Stanbury, 1988:79-88).

The approximate location of the *Sirius* wreck has always been known; it was depicted on contemporary and later charts of Norfolk Island and an anchor remained visible on the site until 1905, when it was removed for display at Sydney. Another anchor was recovered in 1973 but diver disturbance of the turbulent, shallow water site remained minimal. The archaeological investigation of the *Sirius* was an initiative of the Federal government department then responsible for the administration of the *Historic Shipwrecks Act 1976*. In 1982 ideas were being sought for projects to commemorate Australia's bicentennial celebrations and the *Sirius* shipwreck, with its First Fleet connection, appeared to be an ideal candidate. Further documentary research and an initial inspection of the site in 1983 by Graeme Henderson and other staff from the Western Australian Maritime Museum provided sufficient background information for the project to proceed (Henderson, 1984).

With funding from the Australian Bicentennial Authority, Henderson was contracted to direct the project using museum personnel and staff from a number of institutions around the country. Norfolk Island is an external Territory of Australia and support from the local government authority and suitable arrangements for the repatriation of conserved artefacts were critical for the success of the project. Despite its isolated location Norfolk Island has a regular air service and sea transport, so logistical considerations could be overcome with careful planning. It was also necessary to use experienced archaeological divers, as the exposed site was dangerous in most sea conditions. The work on the *Sirius* was subsequently carried out with SCUBA equipment from small dive boats anchored seaward of the surf zone. With water depths of between 4 to 1.5 metres dive times were only limited by air supply and site conditions. Three seasons of field work during 1985, 1987 and 1988 demonstrated that the wreck site had greater archaeological potential than was initially anticipated.

Figure 5.1 Divers recording the iron ballast mound on the *Sirius* site at Norfolk Island (photo courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

Excellent conditions for diving in 1987 gave access to areas of the reef normally prohibited by breaking surf. This allowed the site to be accurately surveyed and mapped over an area measuring 50 by 80 metres with swim searches also locating material outside this main deposition zone. A number of artefacts were recovered from the concretions found on the reef, primarily consisting of a variety of metal ship's fittings and equipment together with a more limited number of crew-related items (Stanbury, 1991a, 1994). The final

resting-place of the hull was marked by a large mass of ballast iron, which, despite the exposed conditions, is believed to protect a quantity of ship's timbers. The archaeological evidence of artefacts and concretions spread across the reef, together with contemporary documentary accounts, was sufficient for a detailed model of the site formation processes to be developed (Nayton, 1988). Further work at the *Sirius* site was conducted in 2002 through the Norfolk Island local government. This work concentrated on the excavation of sand gullies between the reef and the shore, where a considerable range of artefact material was located. As an outcome of this work the management plan for the *Sirius* site, first produced in 1988, was revised and updated (Erskine, 2003).

As a requirement of the Bicentennial funding a publication on the *Sirius* project and the results of the archival and archaeological research was rapidly produced by the two principal investigators (Henderson and Stanbury, 1988). In addition a number of articles were published in popular magazines (Henderson, 1985; Edminston and Jeffery, 1989; Henderson, 1993a). Archival evidence located in Britain as part of the *Sirius* project raised some very interesting points on the original outfitting of Britain's expedition to Australia. The traditional view that New South Wales had been hastily chosen as a dumping ground for convicts had more recently been challenged by historians who argued that there were long-term strategic objectives involved in the decision. Henderson discovered that considerable effort had been expended in fitting out the *Sirius* and choosing the type of vessel, similar to that of explorer James Cook's *Endeavour* and *Resolution*, that was ideal for the work it would have to perform. The survival of the ship's hull on an exposed reef for almost two years was further evidence of the strength and suitability of the *Sirius* (Henderson and Stanbury, 1988:7-53).

Local personnel under expert supervision had conserved the majority of the artefact collection at Norfolk Island, but some of the more complex items were returned to the Western Australian Maritime Museum for more detailed work and recording. Items such as a carronade recovered from the shallows were subsequently conserved and remounted for display (Kimpton, 1992) and Myra Stanbury finalised a report on the complete collection in 1994. A travelling display on Australia's earliest shipwrecks, including items from the *Sirius*, toured Australia during 1988-89 and some material, including an anchor, is now on permanent display at the Australian National Maritime Museum in Sydney. The majority of the collection is housed and displayed on Norfolk Island at the main colonial settlement of Kingston, close to where the ship was wrecked.

5.3. THE HMS *PANDORA* PROJECT

The year after the loss of the *Sirius* at Norfolk Island another British naval vessel came to grief in Australian waters. The mutiny on the British Navy's armed transport *Bounty* in 1789 is one of the better known maritime stories but its sequel, the loss of the 24-gun frigate *Pandora*, has been less

publicized. The Admiralty had despatched the *Pandora* to the South Pacific in 1790 to recapture the *Bounty* and bring to justice the mutineers who had seized the vessel. Under the command of Captain Edward Edwards the frigate arrived at Tahiti in March 1791 and fourteen of the *Bounty's* crew, who had elected to stay on the island, were recaptured. The *Pandora* then spent nearly four months unsuccessfully searching for the *Bounty* but the remainder of the mutineers, led by Fletcher Christian, had previously sailed to remote Pitcairn Island and their fate remained unknown until 1815 (Dening, 1992). On 29 August 1791 the *Pandora* was seeking a passage through the Great Barrier Reef to Torres Strait, when it struck a coral pinnacle and foundered with the loss of 35 lives. The survivors, including ten of the mutineers, reached the Dutch settlement of Coupang in the ship's boats before eventually returning to England (Gesner, 2000: 1-20).

The circumstances of the *Pandora's* loss were well-documented in contemporary accounts (Thompson, 1915; Rutter, 1935) but despite a number of expeditions divers did not relocate the wreck until November 1977, with the assistance of an airborne magnetometer search (Cropp, 1980:74-88). The site was reported to the Australian government, and in April 1979 the wreck was formally inspected and identified by a team from the Western Australian Maritime Museum (Henderson, 1980). The well preserved lower hull was rated by researchers as a "first class" site under the classification system proposed by Muckelroy (1978:157-165), and on 25 November 1979 the *Pandora* was declared as a protected site under the Commonwealth *Historic Shipwrecks Act*. In June 1981 a "no entry" diving zone (Protected Zone) that extended for a radius of 500 metres from the wreck, was also proclaimed under the Act. Responsibility for the site was delegated to the Queensland state government through the Queensland Museum, which established a maritime archaeological section in 1982.

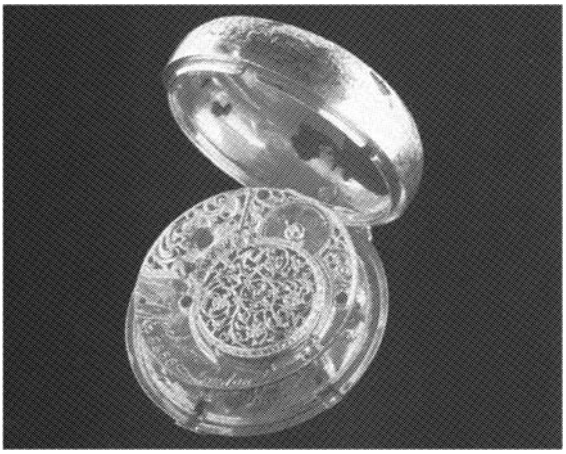

Figure 5.2. Surgeon's fob watch from the *Pandora* site after conservation treatment (photo courtesy of the Queensland Museum).

The wreck is located on the outer edge of the Great Barrier Reef, at what is known as Pandora Entrance, some 140 kilometres ESE of Cape York on the Australian mainland. Although the wreck lies within the reef system it is exposed to swells generated in the Coral Sea and tidal currents deflected across the site by the surrounding reefs. The site depth of between 30 and 34 metres also imposes limits on underwater archaeological operations. The artefact assemblage lies mostly within an area of 20 by 50 metres, with the outline of the surviving hull well delineated and marked by prominent features such as the stern post, numerous cannon, and a large "Brodie" galley stove. A far greater section of the lower ship's timbers survived on the starboard side, due to the lean of the hull at an angle of 34°. This includes the relatively intact areas below the lowest deck where much of the stores, equipment and excess personal effects were located, as well as the remains of upper works and cabins that have collapsed downwards (Henderson, 1986:129-142).

The first three seasons of work on the *Pandora* site by the Queensland Museum were carried out with financial assistance from the Federal government and staffing from a variety of interstate institutions. During 1983, 1984 and 1986 efforts were concentrated on the recording of the extent and condition of the wreck, test excavations, and the establishment of a permanent reference grid on the seabed (Gesner, 2000:23-39). This initial work was constrained by the short dive times allowable on scuba diving equipment and the difficulties of unpredictable currents. Additionally, the location of the wreck over 600 kilometres from the nearest large port of Cairns made expeditions to the site expensive and of limited duration. These problems, and an examination of the rationale behind the "*Pandora* Project", were subsequently detailed by Peter Gesner (1988, 1990). He concluded that in the absence of large-scale funding the Museum could best achieve its management objectives by essentially closing the site down and concentrating on more detailed monitoring and studies of the wreck environment.

Expeditions in 1993 and 1995 focussed on sediment sampling, remote sensing work and very limited test excavation (Gesner, 2000:39-46). Of particular importance for future work on the site, the expeditions trialed the use of commercial-standard surface supplied breathing apparatus (SSBA), which greatly increased dive times as well as improving the safety and effectiveness of the operation. This information would later be crucial for the development of an excavation plan that addressed all aspects of the costing, timing, personnel, equipment and dive platform required to work on the *Pandora*. A further outcome was a detailed understanding of the site formation processes on the wreck and the effects of exposing the structural timbers during excavation and re-burial (Guthrie et al., 1994; Ward et al., 1998, 1999). Ongoing research also produced a number of publications on the material culture of the wreck (Coleman, 1988a, 1988b; Pigott, 1995) and historical research on the construction and fitting out of this class of naval vessel (MacKay and Coleman, 1992).

Political developments in Queensland during the 1990s led the State government to offer a subsidy of up to $1,000,000 for the *Pandora* project and in 1996 the Pandora Foundation was established as a fund-raising body based in the northern coastal city of Townsville. The government also announced that it would provide funding for a major museum development at Townsville that would eventually accommodate and display the *Pandora* collection. With this commitment the Foundation eventually raised a further $2,500,000, largely through local businesses and organizations.

The *Pandora* shipwreck was regarded as one of the few surviving examples from the great period of European exploration of the South Pacific, and the site could provide a precisely dated collection of eighteenth century British material culture and nautical technology. The work would be concentrated at the bow and stern where most evidence of shipboard society and daily life on board the vessel could be located. Previous excavations had recovered personal items from the cabins of two of the ship's officers, Surgeon George Hamilton and Lieutenant John Larkan, and it was hoped that this evidence could be extended to the seaman and other ratings. Of further interest was the collection of "artificial curiosities"—Polynesian artefacts collected by the crew and officers during their search of the South Pacific that have been discussed in chapter 3 (Gesner, 1997).

The 1993 and 1995 *Pandora* expeditions had used the survey ship *Pacific Conquest* out of Townsville and this vessel was contracted to lay four permanent moorings around the site in December 1995, so it could remain on station during diving operations. Considerable effort also went into developing a large team of divers, most with an archaeological background, who could acquire the necessary qualifications to use SSBA equipment in deep water. During four expeditions to the site from 1996 to 1999 many hundreds of artefacts were raised including skeletal remains, crew items and ethnological material. Of great interest was the excavation of partially intact lower deck storage areas, such as the gunpowder room, the captain's storeroom and what appears to be the carpenter's store located towards the bow.

Trials of different recording methods on the site were also carried out including photogrammetry and acoustic surveying techniques (Jeffery, 1999a; Green and Souter, 1999, 2002). During this period small displays of the excavated material were held annually at Townsville, attracting great local interest, and a larger travelling exhibition toured around Australia during 1996-1997. A continuous stream of publicity and information on the project was also maintained, particularly highlighting the role of major corporate and government sponsors during each expedition. This included such features as a website that effectively gave a daily "live" account of progress during the field work. Two of the expeditions were also the subject of films for the National Geographic's Discovery Channel and the British Broadcasting Commission.

Following the 1999 expedition the project focussed on the opening of the new Museum of Tropical Queensland at Townsville in April 2000, with a major gallery devoted to the *Pandora* material and an imposing full-scale reproduction of the ship's bow located near the entrance. The maritime

archaeology section and the *Pandora* artefact collection, including a large quantity of material still undergoing conservation, was also transferred from Brisbane to the new facility. Despite previous plans to continue excavation work at the *Pandora* site the museum is currently undergoing a period of consolidation – completing the conservation, cataloguing and study of the existing collection. A web-based artefact database has been developed and a number of research publications have been completed (Campbell, 1997; Randell, 1999; Fallowfield, 2001; Illidge, 2002; Steptoe and Wood, 2002). A report on the site work up to the end of 1995 has also been produced (Campbell and Gesner, 2000; Gesner, 2000) and the latter stages of the project are currently being written up for publication. As an adjunct to the *Pandora* project Nigel Erskine has also carried out an investigation of sites at the mutineers' refuge of Pitcairn Island, including work on the wreck of the *Bounty* (Erskine, 1999, 2004).

5.4. THE *SYDNEY COVE* PROJECT

Although the two previous case studies have concerned British Royal Navy vessels, the third is a different class of vessel. Wrecked in 1797 during a journey from Calcutta to Port Jackson, the *Sydney Cove* is the eighth oldest shipwreck site in Australian waters and the first merchant vessel lost after the establishment of the colony of New South Wales. In 1796 the Calcutta-based merchant house of Campbell and Clark had assembled a speculative cargo for New South Wales, composed largely of spirits, but also including textiles, foodstuffs, stores, livestock and luxury items. To transport these goods the company acquired a locally built ship of around 250-300 tons which they renamed the *Sydney Cove*. The vessel departed in November 1796 and had a troubled voyage beset by poor weather and the deaths of six of the crew. In February 1797 the *Sydney Cove* was struck by further storms off north-eastern Tasmania and the badly leaking ship was consequently run aground at Preservation Island in the Furneaux Group. A rescue mission to Port Jackson cost the lives of fourteen of the crew but brought assistance to the survivors in June 1797. Three salvage voyages returned the crew and around half of the *Sydney Cove's* cargo to Sydney by March 1798 (Nash, 2001:21-60).

Although divers had sporadically searched for the wreck of the *Sydney Cove* during the 1970s it was not until 1977 that the site was located with the assistance of an original chart of the area produced by Lieutenant Matthew Flinders in 1798. The remains were found approximately 400 metres from the southernmost point of Preservation Island in a relatively sheltered bay. Water depths over the wreck averaged 5 metres and the seabed consists of fine sand and shell sediment largely covered by sea grass (*Posidonia australis*). The divers immediately reported their find and, although no shipwreck-specific legislation was then in place in Tasmania, on 29 March 1977 the wreck and parts of the surrounding islands were declared an historic site under the Tasmanian *National Parks and Wildlife Act 1970.* Over the next three years the

newly formed Maritime Archaeological Association of Tasmania carried out work on the wreck with assistance from the Western Australian Maritime Museum, the Tasmanian Parks and Wildlife Service and the Queen Victoria Museum. The surveys and test excavations undertaken during 1977, 1978, and 1980 established that the surviving lower hull structure and artefact clusters were concentrated in an area approximately 40 by 10 metres (Atherton and Lester, 1982; Lester, 1984a; Strachan, 1986a:9-20). An assemblage of artefacts was raised during this work, including the vessel's rudder (Lester, 1982).

When the *Sydney Cove* was rediscovered, the expertise to work on underwater sites in Australia was still largely confined to Western Australia. Consequently, the initial investigation of the site was undertaken by amateur groups, which only gradually included professional staff backed by government funding. The work on the wreck proved to be a major stimulus to the development of a maritime archaeological program in Tasmania, with the Parks and Wildlife Service employing their first professional maritime archaeologist in 1984 (Nash, 2003a). One of the most important outcomes of this increased interest was the acknowledgment of the heritage values of shipwreck sites, which had prompted the State government to become a signatory to the Commonwealth *Historic Shipwrecks Act 1976* in 1982. The *Sydney Cove* wreck was formally declared a protected site in 1984 under the provisions of this Act.

Lack of funding during the 1980s precluded major work on the *Sydney Cove* although continued monitoring and some recording and site stabilization was carried out (Clark and Smith, 1986). Building on a growing body of research on the *Sydney Cove* and other comparative Australian sites a seminar on Asiatic shipbuilding techniques was held in Tasmania during 1985 (Green and Strachan, 1986). The following year archaeologist Shirley Strachan produced a resource document that summarised the previous work on the site (Strachan, 1986a) and research plans for further excavation were formulated (Clark and Nash, 1988). Since the mid-1980s the focus of the historic shipwrecks program in Tasmania was largely concentrated on the documentation and inspection of other sites around the state. The completion of the initial stages of this program served to emphasise the significance of the *Sydney Cove* as well as developing the expertise essential for more detailed work on the site. On this basis it was also perceived that an excavation project would serve to focus attention on the state's underwater heritage and aid in its preservation and appreciation.

Between 1991 and 1994 a regular program of excavation on the *Sydney Cove* was directed by the author through the Tasmanian Parks and Wildlife Service, with the assistance of the Queen Victoria Museum in artefact conservation and registration (see Figure 5.3). Funding, personnel, and equipment were obtained from Federal and State government organizations such as the Australian National Maritime Museum, the Victoria Archaeological Survey, and the NSW Heritage Office. The numerous volunteers with the project included professionals, archaeology students and avocational divers.

Figure 5.3. Underwater excavation on the *Sydney Cove* site, Preservation Island, Tasmania (photo courtesy of the Tasmanian Parks and Wildlife Service).

The expeditions were based on Preservation Island, where the lessees maintained a number of buildings that provided the necessary accommodation, storage, and work areas. All diving operations and most transport of staff and equipment were carried out from an 11-metre local charter vessel with an inflatable boat operating as tender. The majority of the diving was carried out on a simple surface-supplied air system (hookah) with two water dredges in operation. The shallow site depth allowed teams of divers an average of three hours under water per day, depending on weather conditions.

By the end of 1993 five expeditions had uncovered a total of 216 square metres of the site, or approximately 55% of the area originally gridded out on the seabed (Nash, 2001:87-94). This included approximately 95 square metres of timber structure and thousands of artifacts including major collections of glassware and Chinese porcelain. A final expedition to the wreck in March 1994 stabilized a number of major features, such as cannon and a ship's pump, and sealed the hull remains by the placement of over 500 polypropylene sandbags. Weed growth on these bags acted as a sediment trap and resulted in a cheap and very effective means of stabilization. A further expedition to Preservation Island was undertaken in 2002 to locate and carry out test excavations at the site of the *Sydney Cove* survivors' camp. This uncovered evidence of a hut site and the activities of the crew during their 12 months occupation of the island (Nash, 2004).

Analysis of the artifact collection and further documentary research has continued over a number of years and resulted in a range of reports and publications (Bruer, 1993; Staniforth, 1996; Staniforth and Nash, 1998) as well as a major contribution to a Doctoral thesis (Staniforth, 2003). Publications

summarizing the results of the project have recently been finalized (Nash, 2001, 2002a). The extent of the *Sydney Cove* collection and the range of documentary and visual material from this earliest period of Australia's colonial history also offered considerable opportunity for the development of an exhibition based on the wreck. In 1995 and 1996 the Queen Victoria Museum received grants for this purpose from Visions Australia, the Federal government's touring visual arts scheme. With support from the Parks and Wildlife Service, the Ian Potter Foundation and a number of local sponsors, a display was officially opened at the Museum in February 1997, on the bicentennial of the loss of the *Sydney Cove*. The events surrounding the bicentennial of the wreck also extended to newspaper coverage to "recreate" the voyage, and the involvement of the Flinders Island community in a series of local commemorative activities. The material subsequently travelled to Tasmanian and interstate venues such as the Australian National Maritime Museum during 1997-1999 before returning to Launceston. Selected items from the collection continue to be used for display in a range of local and interstate exhibitions, highlighting such diverse subjects as time at sea, trade from India to Australia (Broadbent et al., 2003) and the Australian Customs Service.

The artefact collection from the *Sydney Cove* has provided material evidence for the extensive trade networks that existed even during the earliest years of European settlement in Australia. Although the cargo of alcohol, foodstuffs, and textiles was largely obtained from Calcutta and the hinterland of Bengal, European luxury goods as well as Chinese porcelain and tea were also included. The composition and generally poor quality of the excavated cargo confirms the dependency of the colonists on the choices of overseas merchants. This is highlighted by the inclusion in the cargo of a large and varied quantity of alcoholic spirits, despite existing government regulations and the lack of more essential stores and equipment in the colony. The collection also lends weight to the argument that successful colonization depended on the supply of familiar material culture from the core society (Great Britain) and its associated outposts (Staniforth, 1995, 2003). As the artefacts from the *Sydney Cove* are accurately dated the collection has also proved useful for comparative studies with early European settlement sites in the Sydney region.

Although there is sparse documentary evidence regarding the history of the vessel the excavation has been able to confirm that *Sydney Cove* was constructed for use in the "country" trade, carried out between Asian ports and the European colonies in the East. Built upon European lines, the *Sydney Cove* had the light construction and shallow draft of a fast sailing vessel designed for short coastal voyages rather than longer ventures to the Southern Ocean. Although the ship was constructed of locally obtained materials, the large metal fittings found on the wreck, such as anchors, cannon, and rudder braces, were imported from Europe via the British East India Company. The rapid transfer of European technologies has also been demonstrated by the use of copper sheathing, in combination with more traditional Indian methods, to protect the vessel's hull (Nash, 2001:97-120).

5.5. DISCUSSION

There are some common threads that run through these case studies, particularly the national approach to maritime archaeology in Australia. Central to this is the existence of a legislative structure under the Federal government's *Historic Shipwrecks Act* and the supporting role of the Australasian Institute for Maritime Archaeology (AIMA). Within this framework, and aided by the Federally funded Historic Shipwrecks Program, each state and Territory has developed the capacity to undertake work on shipwreck sites. The extent and nature of these projects varies according to the organization, objectives and resources of each state, however, the underlying principles of protection, research and interpretation of the nation's maritime heritage remain the same. This direction is articulated in a number of documents (Henderson, 1994; Edmonds et al., 1995) and common resources such as the Australian Shipwrecks Database and a range of publicly available information.

Another significant factor was the role of the Western Australian Maritime Museum in providing expertise and early direction to these projects, as no Australian states had maritime programs before the early 1980s. During the late 1970s the Western Australian maritime program had been extended to early colonial wrecks in local waters, then progressively to other Australian states and a number of South East Asian countries (Henderson, 1986:79-127). From 1980 onwards the Museum also provided postgraduate training in maritime archaeology that gave a generation of students a common grounding in the subject. This is apparent in the cooperative nature of the excavation projects outlined above – drawing support from a number of organizations and individuals across the country. The number of professionally trained maritime archaeologists in Australia is relatively small and the willingness to share staff and resources between institutions strengthens the maritime programs in the various states. This extends to a supporting body of avocational maritime archaeologists, some in organized associations, who have considerable expertise available. With the *Sydney Cove* excavation, for example, the underwater recording grid frame was designed and built by a volunteer with tradesman's qualifications.

The role of detailed planning and reporting during the various stages of these major projects has also been critical. Although some aspects of the early work on the *Pandora* and *Sydney Cove* "grew like topsey" (Gesner, 1988:27), it was generally undertaken and reported to a standard that gave later researchers a very good understanding of the sites. Crucially, when the decision to carry out larger-scale excavations was made there were good resource and management documents available to guide the projects (Henderson, 1984; Strachan, 1986a; Gesner, 1990, 1993). The high standard of reporting and publication has been continued with the regular appearance of journal articles, occasional papers, excavation reports and books (see above). Critically for ongoing community and government support and funding, there have also been numerous accessible articles in "popular" publications (Henderson et al., 1983; Marsden, 1985;

Henderson, 1993a; Smith, 1995a). Information on the projects and the artefact collections has been publicly disseminated through the Internet, a particularly good example being the *Pandora* web site developed by the Museum of Tropical Queensland. The use of publicity in all its forms – radio, print and electronic media, television and film – was also a key element in the development of community, corporate, and government support.

As a final point to note, there is an increasing dichotomy in Australian maritime archaeology between major shipwreck excavation projects and the demands of management regimes. Some state agencies have chosen to concentrate their efforts on broader survey, protection and conservation activities and have limited the work undertaken on individual shipwrecks. For a number of reasons the trend in maritime programs has moved towards regional or thematic studies, however, the more intensive examination of individual sites still has a role to play. A case in point is the study of the 1865 wreck of the steamship *City of Launceston* in Victorian waters (Strachan, 2000a). During the late 1990s the site managers, Heritage Victoria, received major state funding to investigate the conservation of the site with a view towards allowing diver tourism. The subsequent study included a detailed history, the recording of the largely intact wreck in three dimensions, and corrosion studies to determine its vulnerability to further disturbance. Other activities included a small-scale test excavation, the removal of any loose artefact material from the decks and the installation of permanent moorings and site markers for dive vessels. This management-driven approach, directed towards well-articulated public outcomes, will arguably be the direction of all future shipwreck projects in Australia.

Chapter 6

Maritime Archaeology at the Land-Sea Interface

Martin Gibbs

6.1 INTRODUCTION

Ever since the inception of Australian maritime archaeology in the late 1960s, researchers have been recording terrestrial and intertidal sites associated with maritime industry, navigation and port infrastructure, as well as sites related to shipwrecks through survivors or salvage (Stanbury, 1983; McCarthy, 2003). Much of this activity, however, took place as an adjunct to what was perceived as the core focus of "shipwreck", "nautical" or "underwater" archaeology. In part this was because most practitioners were employed developing listings and monitoring sites that fell within the legislative framework of the *Historic Shipwrecks Act* 1976, so other sites and places were by necessity given a marginal status in their work and research commitments.

Although the first indications of a broadening perception of the scope of maritime archaeology dates to the mid-1980s, in the last ten years there has been a significant shift in Australian practice. In part this is because of international trends towards a broader framework, redefining the concerns of maritime archaeology as:

> [the] study of human interaction with the sea, lakes, and river through the archaeological study of manifestations of maritime culture, including vessels, shore-side facilities, cargoes, and even human remains (Delgado, 1997:259).

The process of embracing this wider conception has progressively blurred the land-sea divide that allowed maritime archaeology to define itself in terms of marine methodologies or narrow legislative responsibilities, and consequently extended its interests towards a greater range of sites, questions

and approaches. For Australia, this has meant an increasing interface with other sub-disciplines, especially "historical" archaeology, which has the most obvious overlaps in terms of thematic interests, temporal range, artifacts and datasets. Interplay between the sub-disciplines over terrestrial and intertidal sites has also seen the progressive shift from a historical particularist focus on the specifics of particular events and technologies (characteristic of most maritime archaeological investigation), to a concern with anthropological understandings of cultural processes (Green, 1990:235). Increased interaction with the university sector and a flow of students into maritime archaeology, including established practitioners engaging in higher degree studies, has hastened this shift.

This chapter reviews two examples of terrestrial research in Australian maritime archaeology where these transformations are most evident. The first is the study of shipwreck survivor camps, which was a part of the advent of maritime archaeology in this country but continues to be of interest several decades later. The second is the investigation of the nineteenth century shore-based whaling industry, which has seen some of the most successful linkages between "maritime" and "historical" archaeologies. A short historical overview of the nature, aims and results of major projects on each theme is provided here, although primarily the intention is to direct the reader to the original and more detailed sources and discussions. Although the focus of this chapter is on published papers and books, there are some significant works that are only available as unpublished reports or as theses.

6.2. SHIPWRECK SURVIVOR CAMPS

Survivor camps are one of the most direct linkages between maritime and terrestrial archaeologies. Following the catastrophic sinking, grounding or destruction of a vessel, it was not uncommon for survivors to strike for land and, unless salvation was immediate, establish a base at which to wait for deliverance, attempt to effect their own rescue, or otherwise ensure their continued existence. In many instances, this included an ongoing relationship between survivors and the wrecked vessel with its salvageable materials, at least where access remained possible. Consequently, the connections between the marine and terrestrial sites are often immediate and comprise a series of linked events and behaviours easily traceable within both historical and archaeological sources. Despite this, a systematic approach to survivor camp archaeology is only relatively recent (Gibbs, 2002a, 2003a).

People had been aware of the existence of "historic" survivor camps associated with the seventeenth and eighteenth century Dutch VOC shipwrecks off the Western Australian coast for some time prior to the discovery of the wrecks themselves. Although industrial activity, collectors or well-intentioned amateur archaeologists had extensively disturbed some sites, identification of these assemblages often became the first step towards the underwater investigations that resulted in the establishment of professional maritime

archaeology (Edwards, 1966; Playford, 1996). The period from the 1960s to the early 1980s often saw land-based studies of the survivor camps accompanying the wreck-based activities. However, the emphasis remained firmly on the underwater components, with the questions asked about the land sites usually framed within a relatively simple, historical particularist paradigm that focussed on linking particular sites and artefacts to the documented narratives.

The earliest and most enduring attention has been on the sites associated with the *Batavia* (1629), scattered across several islands of what is now known as the Wallabi Group of the Houtman Abrolhos Islands (Green, 1989). Because of the detailed historical accounts of the insurrection that led to the slaughter of some 125 people, as well as the division of the survivors into two murderously opposed factions, much effort has gone into locating and recording features that may fix these events into specific sites and locales (Drake-Brockman, 1963). From the 1960s, collectors and amateur investigators scoured the islands on this quest, finding a number of coral and stone features, including fireplaces, wells, a lined pit and several walled structures, as well as surface scatters and even evidence of a cached seal skeleton (Edwards, 1966).

Rampant souveniring and digging, however, as well as an almost complete lack of recording effectively destroyed any chance of clearly associating most of these sites with the Dutch, even when seventeenth century artefacts were allegedly recovered within structures. Several Dutch skeletons were also unearthed, but given only cursory examination before being put on display as graphic examples of the gory happenings on the islands. In the 1970s and 1980s several museum expeditions re-recorded the stone structures and undertook further individual excavations. Despite stated aims of investigating settlement and subsistence of the survivors, however, the sites and materials were only subjected to limited descriptive analysis within a narrow context (Bevaqua, 1974a; Orme and Randall, 1987; Stanbury, 2000).

In the 1990s, a re-evaluation of the *Batavia* survivor camps commenced with a review of previous studies, establishment of a new framework for physical investigation and recommendations for reorienting investigations on these sites. The latter included development of clearly stated and relevant research questions that took into consideration the whole complex of sites, full analysis of existing assemblages prior to further invasive work, a systematic approach to the sites as a whole, and proposals for comparative study with other survivor camps (Gibbs, 1992; Stanbury, 1998). A study of the faunal materials recovered from the early excavations has already suggested varying subsistence strategies between the different (opposing) groups involved, depending on which islands they had control of and differential access to material salvaged from the wreck (Marwick, 1999). However, the remaining material culture items remain unanalysed.

Most recent archaeological research has been devoted to a reanalysis of the human skeletal material recovered since the 1960s, as well as a mass grave of seven men, women and children discovered in 1994 and fully excavated in 1999 (Gibbs, 1996; Hunneybun, 1995; Pasveer et al., 1998). The earlier discoveries, which had been dispersed to various museums, were reassembled

and subjected to intensive morphological analysis to determine sex, age and trauma. These characteristics were matched against data about individuals contained in *Batavia's* crew and passenger registers, as well as the information on the murders, which was gleaned from the confessions of the mutineers. More intensive studies have examined the remains for pathology (such as evidence of scurvy), occupational stress, ante-mortem trauma, as well as dental health and possible status indicators (Franklin, 2001). Although useful, these studies are still within a very narrow band of research primarily investigating the events of the mutiny.

Investigations of the survivor camp of the VOC ship *Zeewyck* (1727) wrecked further south in the Pelsaert group of the Abrolhos, followed a somewhat more focussed archaeological research design, but similarly limited historical questioning. In this case, the campsite where the 96 survivors had spent nine months constructing a rescue vessel was identified as early as 1840. In the mid-nineteenth century guano miners dug through and destroyed at least some parts of the site, although Dutch artefacts were diligently collected for the historically minded owner of the company and later donated to the Western Australian Museum (Bevaqua, 1974b). In 1976 the Museum began combined investigations of the shipwreck and associated land sites, which included systematic test-pitting along the narrow, unmined northern fringe of the island (Ingelman-Sundberg, 1976, 1977) Although an appreciable amount of seventeenth century material was recovered, the intent of the land study was primarily to locate the campsites and the shipyard. Although these aims were achieved, the artefacts were not analysed with regard to what they might tell about the occupation of the island or the salvage of the vessel, or how this compared to other sites. These assemblages remain untouched since the original work.

Whereas *Batavia* and *Zeewyck* had extensive historical documentation from the survivors which in many ways facilitated and in some respects constrained investigations, the two remaining Dutch shipwreck camps, *Vergulde Draek* (1656) and *Zuytdorp* (1727) have limited or no documentation. There were approximately 68 survivors of the 190 crew originally aboard *Vergulde Draek* and they were last seen on the mainland Australian coast, as a small boat headed northwards to seek help. When the rescue vessel finally arrived some months later, no trace of the survivors or their camp was located, and the fate of the men remained unknown. Whether they moved away as part of a rescue strategy, were killed in hostile encounters with Aboriginal groups, or died from lack of food or water is open to question. Although coins, which most likely came from the survivors, were found in sand dunes near Moore River in the 1930s, metal detector searches of the area by archaeologists in the 1970s failed to find any further evidence (Henderson, 1986:24).

In contrast, the *Zuytdorp* (1712) simply vanished, fate unknown, until artefacts first discovered in the 1920s on the top edge of a high cliff north of Kalbarri were finally identified in the 1950s as most likely belonging to the missing vessel (Playford, 1996). The absence of a historical record meant that for some years the interpretation of the site as a survivor camp remained

ambiguous, although the curious diversity of items, apparently deposited around large hearths, did not allow immediate explanation as salvage by the Aboriginal community either. Once again, early avocational investigations from the 1940s onwards all but destroyed any clear archaeological associations that might have easily resolved the nature of the sites.

From the mid-1980s to the early 1990s a series of new investigations of *Zuytdorp* under the direction of Mike McCarthy revisited the several supposed sites to attempt to resolve whether these represented survivors, or Aboriginal salvage (Morse, 1988; Weaver, 1994; McCarthy, 1998c). Investigations included maritime archaeologists working with historical archaeologists trying to bring context to earlier discoveries by conducting further excavations to locate in-situ material, while prehistorians examined the Aboriginal sites in the area for evidence of interaction between the groups. Although the diverse nature of the cliff top assemblages and the original reports of their placements around what may have been signal bonfires strongly suggest survivors, the extent of previous disturbance meant that little further information and few firm conclusions can be drawn.

The one *Zuytdorp* artefact found in an Aboriginal site some distance from the wreck cannot be easily attributed to either Aboriginal transport or to the period of the wreck (Bowdler, 1991). Subsequently, Dr Phillip Playford, who originally identified the wreck, has suggested that survivors of the *Zuytdorp* interbred with local Aboriginal groups, as evidenced by the occurrence of the rare genetic disorder *porphyria variegata* amongst some members of the Malgana people who traditionally lived near the wreck site. This condition can be traced to a specific Dutch family resident in Cape Town in the seventeenth century, opening the possibility that a member shipped aboard the undermanned *Zuytdorp* when it touched there several months before its loss (Playford, 1996:228).

Although much attention has been given to the VOC sites, several survivor camps from the colonial period have also been located and in some cases recorded. The most comprehensive investigation has been of the wreck the British merchant vessel *Sydney Cove* (1797) with its associated land site on Preservation Island, in Bass Strait (Nash, 2001, 2002a). During a twelve month occupation crewmembers salvaged stores and cargo, established their camp and eventually replaced tents with a wooden building, dug a well, constructed a smokehouse for the birds and fish they caught, and had a lookout and signal cairn on a high point (Clark and Smith, 1986; Strachan, 1986a).

Although the shipwreck site had been subject to extensive recording and excavation (see Chapter 5) the associated land site was only positively identified and partially excavated (see Figure 6.1) in 2002 (Nash, 2004). The location of part of a building described in historical accounts showed that the survivors had utilized different parts of the shipwreck for construction purposes – including galley bricks, hull timbers and copper alloy fastenings. The evidence of hundreds of bones recovered from the site also demonstrated how the crew had changed their survival strategies while on the island. Initially relying on salvaged stores and foodstuffs from the cargo the men, when released from the

duties of salvage, had hunted and eaten a variety of native marsupials and locally breeding seabirds. The crew also utilized various items of cargo or equipment at their camp such as bottled alcohol, pottery and ceramic containers, timber casks and a variety of small metal fittings. Additional artefact material located during surveys of the island showed where salvaged cargo had been stored in relation to the campsite and the wreck.

The evidence of shipwreck salvage and utilization at the terrestrial site has important implications for the study of the underwater remains of shipwrecks. In many cases the shipwreck survivors will physically impact on the wreck site as they attempt to retrieve the material necessary for survival. In this instance the study of both a shipwreck and terrestrial site in some detail provides concrete evidence for the salvage model proposed by Gibbs (2003a:138-141). The paradigm for the study of shipwreck formation processes remains with the early work of Keith Muckelroy (1978), but a more integrated model can now be constructed from the consideration of human actions (through salvage) and the natural processes on an underwater site (see Ward et al., 1998, 1999).

Despite an evolving approach to survivor camp studies, the enduring problem has been the tendency to view these sites and situations as individual "events" to be explored separately, rather than as related phenomena that inform on broader processes of human behaviour and activity. However, even a cursory examination of both the historical and archaeological records reveals repeated themes and patterns. Some are imposed by the similar physical nature of ships, others by the organization of shipboard cultures, as well as by the psychology of human response to crises. Identifying the areas of commonality opens

Figure 6.1. Excavation of the *Sydney Cove* survivor's camp on Preservation Island (photo courtesy of the Tasmanian Parks and Wildlife Service)

opportunity for comparative studies that look at the processes of shipwreck survival and primary salvage over time, between different groups and in different situations. A longer consideration of the potential for a comparative archaeology of shipwreck survivors is provided elsewhere (Gibbs, 2003a), with a summary of potential categories and considerations provided in Table 6.1.

CATEGORIES	CONSIDERATIONS
Relationship between Wreck and Survivor Camp	Selection of camp site relative to wreck (considering proximity for possible salvage and signalling purposes) and other environmental variables of site including topography, defensive capability, access to water and other resources.
Authority, Social Structure and Camp Organization	Nature of transfer of authority and social structures from ship to shore, including development of new forms based on nature of survivor group or situation. Evidenced in spatial distribution of camp site(s) and internal patterns including artefact distributions within and between sites.
Subsistence	Shifts (if any), from salvaged supplies to foraging, evidenced in faunal/floral remains, extractive technologies, storage facilities, wells or water catchments.
Material Culture	Salvaged supplies, modified salvaged materials, local foraged/manufactured or trade items, including innovations to suit situation.
Shelters and structures	Structures associated with habitation, storage, signalling, etc. Consideration of salvaged or foraged construction materials, techniques, design, size, internal layout.
Health and Mortality	Short and long-term impacts and strategies. Consideration of subsistence remains and local environmental variables, including presence of burials and evidence of trauma, pathology, etc on skeletal remains.
Development of a Rescue Strategy	Selection of various strategies based on situation and available resources, including waiting for rescue, walking to safety, sending boat for help, repairing vessel or building a new one, establishing new settlement, integrating with local/Indigenous community. Archaeological evidence of construction of vessel, signalling apparatus, nature of habitations, subsistence, etc.
Survivor Camp as Contact Site	Development of cooperative or hostile relationships with local/Indigenous groups. Evidence of defensive strategies, trade relations and flow of goods between sites, conflict, genetic relations, etc.
Salvage	Depending upon access to wreck: categories of material removed (i.e. essential survival vs. non-essential salvage; cargo, contents, major and minor structural materials), relationships to other strategies, e.g., subsistence, shelter, rescue, etc. Salvage processes at time of rescue, or during subsequent systematic or opportunistic salvage.
Psychology	Influences of crisis or disaster upon individual and group behavior patterns and processes during wreck event and abandonment, survivor period and in rescue phase.

Table 6.1. Comparative Categories for Investigating Survivor Camps.

The nature of the relationship between the social structures and material culture of the original vessel, and how these translate into the strategies of the survivor group, is the crucial linkage between the two classes of sites. Although the intensity of the "catastrophic" aspect of shipwrecking obviously varied greatly, in most circumstances the transfer from ship to shore, and subsequent activities ashore including salvage from the wreck (where possible), might be seen in terms of attempts to adapt to new circumstances, employing physical and social resources as necessary to best ensure survival. In short, intensive study of the history and archaeology of each survivor camp needs to be undertaken in a framework that allows comparative study to other incidents, to examine how such responses changed over time and in different circumstances. The latter might include the effects of variations in the authority structure depending upon the type of vessel (Naval, merchant, etc), cultural origins, religious and ethnic backgrounds, social and economic variables, population mix, the cargo and contents of the ship, and the nature and severity of the wreck event.

What is being proposed is a broad anthropological rather than historical particularist study, requiring analytical and interpretive approaches not usually associated with maritime archaeology (Gibbs, 2002a). Although future studies of survivor camps need to be designed to take these structures into consideration, it is also possible that existing assemblages can be productively reanalysed and if necessary supplemented by further investigations to address new questions. Developing an overall understanding of the responses and strategies employed by survivors might also assist in the location and interpretation of currently unlocated sites such as that of the *Vergulde Draek*, or heavily disturbed sites such as *Zuytdorp*. Continued efforts need to be made to understand the nature of cultural contacts between survivors, castaways, and Indigenous groups (Nutley, 1995; Anderson, 2000; McCarthy and Silvester; 2000; Jeffery, 2001; Gibbs, 2002b).

6.3. SHORE-BASED WHALING

Although the Australian colonies were engaged in a variety of extractive maritime industries, such as fishing, sealing and pearling, the most significant of the late eighteenth and nineteenth centuries was undoubtedly whaling. In this period, many countries competed to catch the various species of cetacean and render from their blubber the fine oils that lubricated the machines and lighted the cities of the industrial revolution. At the top of the range were the deep-sea (pelagic) whalers, renowned for spending up to four years cruising the globe and capable of undertaking both the whale hunting and all of the processes of extracting oil aboard, occasionally returning to land to offload their catch and take on food, wood and water. Large fleets departed from various nations including Britain, France, Holland and especially the United States, while the Australian colonies at Port Jackson and Hobart eventually managed to develop modest pelagic industries.

In Australia, New Zealand and many other parts of the world, however, people without the means to purchase ships managed to participate in the international oil market in a more modest way by establishing shore whaling stations. These were essentially seasonal operations where fleets of 6-person boats would wait for sightings of coastal migrating species (usually Humpbacks and Right whales), and then launch from shore. Once killed, the whale would be towed back to shore and either beached in the shallows or alongside a jetty or pontoon and "cut-in" to remove the blubber and flexible baleen (whalebone). The blubber pieces were then thrown into large iron cauldrons (trypots) set in brick or stone fireplaces near the beach and the oil rendered out and barrelled (Pearson, 1983). These station camps would usually also include storerooms, facilities for coopering barrels, fixing boats and other associated activities, as well as accommodation for workers. Success varied over time and in different regions, although overall shore whaling had mostly ended as a viable industry by the late 1870s.

Interest in the archaeology of shore whaling emerged in the mid-1980s when various Australasian heritage agencies began to commission historical and archaeological studies of the industry, partially in response to growing development pressures on coastal areas. Some were large-scale regional surveys attempting to evaluate the status of the whole resource, while others were intensive investigations of smaller areas or even single sites (see Kostoglou and McCarthy, 1991; Townrow, 1997; Nash, 1998). Although most studies focussed on the terrestrial remains, several surveys included underwater investigations of adjacent seafloors, recording associated processing structures, lost or discarded technological items, as well as whale bones originating from the discard of carcasses. A surprising finding was that despite their vulnerable positions on the coastal fringe, dozens of shore whaling sites have survived across southern Australia and New Zealand. In the case of the Australian state of Tasmania, survey work has identified nearly 60 separate whaling stations on the southern and eastern coasts (Nash, 2003b:128-160).

Although the majority of investigations have been descriptive and primarily aimed at locating and assessing the nature of the archaeological remains for management purposes, several academically-based research projects on whaling have also been undertaken, sometimes as an extension or in collaboration with the management studies. A surprising aspect has been the mixture of researchers, from agencies, museums and universities, spanning the normal "historical" and "maritime" divides, gravitating towards a common interest in whaling activity. In 1997 the *Archaeology of Whaling in Southern Australia and New Zealand* (AWSANZ) project, overseen by Mark Staniforth and Susan Lawrence, made the first attempt to draw together these researchers, initially to create a forum for sharing the results of the research, and then with the hope of creating a broader analytical and comparative framework. The papers that emerged from the 1997 conference are available in a single publication (Lawrence and Staniforth, 1998) and much of the research referred to here is outlined in that volume.

One of the strengths in conceiving of a wider Australasian study of shore whaling is that the different operations and stations functioned within a single industry. There were shared intentions and rationales, relationships with wider economic and settlement processes, a core of technologies, processes and labour structures, and a flow of persons and technologies between shore stations and the international pelagic industries. Comparative studies can therefore identify the nature of local and regional variations in response to differing environmental, social and economic conditions, as well as change over time. There is not space here to review even a selection of the different studies of shore whaling, so instead the themes that run through the different approaches, as well as the areas in which variations occur, are considered. Table 6.2 lists some of these, although this is neither exhaustive nor exclusive, since most categories overlap or are interwoven.

CATEGORIES	CONSIDERATIONS
Industrial processes	Site location, organization and nature of industrial plant and infrastructure including lookouts, storage and maintenance facilities, catch and processing strategies, transport systems. Variations due to local environmental, economic and technological circumstances, as well as change over time.
Industrial relations	Workforce composition (including ethnicity), work conditions and provisioning agreements, camp organization, social dynamics, stratification/hierarchy, etc.
Campsite as Settlement	Relationship to wider settlement and/or frontier processes, camp structure and layout, economy, supply, subsistence, external social relations, presence of non-whalers including women and children.
Whaling station as contact site	Social and economic relations with local Indigenous communities. Indigenous whalers.
Management	Site conservation, management & interpretation.

Table 6.2 Comparative Categories for Investigating Whaling Stations.

The majority of shore whaling studies have emphasized basic details of site location and station organization, usually within the context of the historical operation of the industry at either a regional or a local scale (Lawrence and Staniforth, 1998). As noted above, the similarities in intent and process are clearly evident in the disposition and types of archaeological remains. Stations were situated for proximity and access to the resource (locales frequented by migrating whales), which is an aspect of the overall catch strategy. A sheltered area was required for the station and boats, while flensing platforms, tryworks, lookouts, maintenance and storage facilities were necessary for the industrial processes. However, variations occurred in response to local environment, opportunities or constraints (sometimes relative to the locations and activities of other stations) as well as the economies of the individual station. Although many stations were essentially ephemeral, using natural features and with minimal structural development, others were semi-permanent, with elaborate stone

breakwaters and buildings. The scale of operations inevitably influenced the size and extent of the sites, with some stations having 10 boats and nearly 100 workers, while others operated with two boats and maybe 14 men.

In many instances, researchers have situated the establishment and operation of the shore stations within wider local and regional settlement processes (Nash, 2003b). Whaling was not only one of the earliest export industries for the Australasian colonies, the shore stations were often established on remote coasts and islands, making them the first sustained European presence in those areas. Operating on the frontier, sometimes semi-isolated for months at a time means that a range of factors associated with isolation and distance, including transport systems and especially the nature of external supply versus local food production, need to be considered (Gibbs, 1996; Lawrence, 2001a, 2001b). Some whaling stations also operated as one of several related groups, or in competition with nearby companies, or in concert with sealing parties. Often the shore whaling was only one aspect of broader maritime, pastoral/agricultural or mercantile concerns for owners and operators, and just one of several seasonal activities for the workers. Consequently, the archaeological remains of the stations need to be understood as part of a consideration of a wider colonial landscape and "seascape" (Stuart, 1998).

Several of the more intensive studies, usually involving excavation and analysis, have also examined what the archaeology of whaling stations can tell us about life and service in the industry. Shore whaling had a number of

Figure 6.2. Building remains excavated at Lagoon Bay whaling station, Tasmania (photo courtesy of the Tasmanian Parks and Wildlife Service)

peculiarities in the way that labour was organized and operated. The first was that it retained strong links to the structures of pelagic whaling, with workers contracted and paid using the same system of "lays" (proportional shares), and often with the same sorts of terms and conditions as used aboard ship. In many instances the shore whalers were in fact seamen who had retired to land or were only temporarily working ashore, while stations owners were often mariners themselves. Second was that the shore stations were far more ethnically diverse than almost any other colonial industry, with white British and American, Negro, Pacific Islander, Aboriginal and other crews working side-by-side. Although documentary sources indicate equality in pay, the nature of their working and living arrangements, plus tensions within and between stations, need to be fleshed out through the archaeological record.

Elements of the living and working conditions and arrangements are encoded in the nature of the structures on the station and their relationships to each other. Aspects of the material culture of the industry that are undocumented in historical sources can be preserved in the matrix of the sites such as details about the construction of tryworks (see Figure 6.2). Food was especially important for shore whalers, with appropriate supply lying at the heart of labour relations, just as it did aboard ship. For instance, despite distance and cost, bones from sheep and cattle dominate the archaeological assemblages, probably meeting the nature of the provisioning agreements with the crew, although some variety from local fauna is also evident. Although similar supplies were apparently provided to all members of the whaling party, status was expressed in other ways, such as in the forms of tableware (Gibbs, 1996; Lawrence, 2001a).

Excavations are also revealing unexpected insights into the social and economic life of the stations, with evidence of women and children confronting the normal picture of male-only seasonal fishing camps (Gibbs, 1996; Staniforth et al., 2001). In addition, there is increasing interest in the role of whalers as agents of cultural contact with local Indigenous groups. Aboriginal communities drawn to the stations by the opportunities for access to the massive meaty carcasses discarded by the whalers. Over time they were drawn into various forms of social and economic engagement with the whalers and in many instances younger men became boat hands, sometimes harpooners and even took ship for foreign lands on pelagic vessels (Gibbs, 2003b; Staniforth et al., 2001).

As noted, many of the studies of shore whaling stations originated as conservation and management studies. Consequently, there has been exploration of the issues of how to manage sites situated on the coastal fringe, vulnerable to the forces or erosion such as from storm surges, as well as to modern re-use of what are often sheltered and therefore highly desirable beachfront area. Many papers in Lawrence and Staniforth (1998) cite regional management studies of this type, although particular mention goes to Bell's (1991) consideration of the South Australian sites.

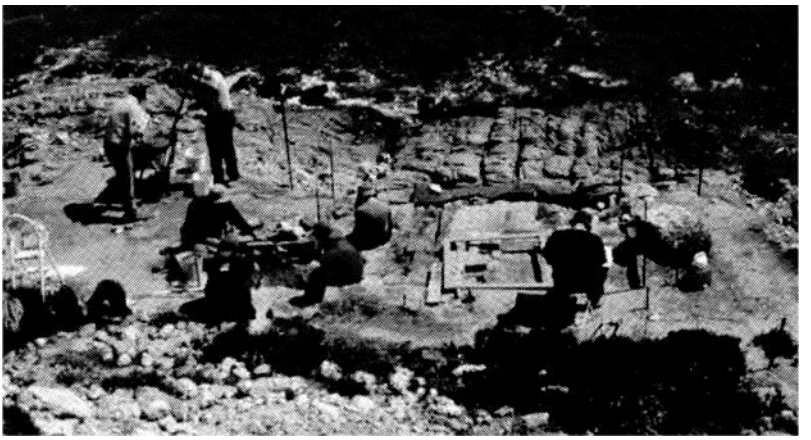

Figure 6.3. Archaeology students excavating at the Sleaford Bay whaling station tryworks in South Australia (photo courtesy of the Department of Archaeology, Flinders University).

6.4. CONCLUSION

It has not been possible to provide in this chapter either a thorough overview or critical appreciation of maritime archaeology at the land-sea interface. Australian maritime archaeology has always been at the forefront of innovation and has a long history of a "holistic" approach to maritime sites (McCarthy, 2003). The shift towards a broader engagement beyond nautical concerns, however, still poses challenges for how the sub-discipline views itself and engages with other archaeologies, their associated methodologies and theoretical structures. Greater integration of the heritage and university sectors is assisting with some of these changes and making the prospect of investigating the land-sea interface a much more challenging and fruitful enterprise.

Chapter 7

Underwater Archaeology

David Nutley

7.1 INTRODUCTION

This chapter examines some of the work undertaken in Australia on underwater and related sites other than shipwrecks. This includes work on jetty sites, Australian Indigenous sites underwater and aircraft underwater. The chapter first considers Indigenous underwater archaeology projects such as the Lake Jasper project and other work done by Charles Dortch in Western Australia. Examples of some of the extensive work on fish traps around Australia are included and consideration is given to the potential for further investigation of inundated indigenous sites. It then examines a range of work done on aircraft underwater including Darwin Harbour in the Northern Territory, and Broome in Western Australia. It looks at current strategies being used to promote awareness of aircraft archaeology. Finally, a review is provided of the investigations of maritime infrastructure including those undertaken in South Australia, Western Australia, New South Wales and Tasmania. The instigation of these investigations varies from volunteer projects to development-driven consultancies and formal academic research. The review highlights the different outcomes associated with each of these approaches.

This view of underwater archaeology includes sites at the interface between land and water where the crossover between terrestrial archaeology and underwater archaeology is most clearly demonstrated. Everything from Indigenous sites, shipwrecks, inundated towns and villages to aircraft wrecks are to be found in the coastal intertidal zone. Both land-based archaeologists and archaeologists specialising in working in the permanently submerged underwater environment have extended their studies to include the intertidal zone (e.g., O'Connor and Sullivan, 1994).

7.2. INDIGENOUS SITE STUDIES

The study of underwater sites of Indigenous Australian origin has fallen well behind the investigation, conservation and management of similar land-based sites. This is not because sites in these areas are less likely to be disturbed. Dredging programs, bridge construction, reclamation, cable laying, tunnel construction and other activities all have the potential to damage or destroy underwater archaeological sites. The potential impact of development on submerged Aboriginal sites is rarely considered during environmental impact assessments because it is "out of sight and out of mind" and often harder to identify and investigate than equivalent sites on dry land. There is, however, an increasing awareness of the importance of developing techniques and predictive models in order to provide appropriate management of this unique component of Australia's underwater cultural heritage (Nutley, 2000).

As an island continent the prehistoric settlement of Australia was closely tied to the use of maritime and estuarine locations. The first occupations of the continent over 40,000 years ago involved a boat journey of at least 90 kilometres from Sunda (Indonesia) and subsequent travel along the coastal fringe (White and O'Connell, 1982:42-53). Archaeologists have carried out considerable work on "maritime-related" Indigenous sites on the Australian coasts including studies of occupation patterns (Bowdler, 1995; Gaughwin and Fullagar, 1995), fishing methods (Colley, 1987; Gerritsen, 2001), watercraft (Rowland, 1995; Bednarik, 1998, 2002), and diet (Walters, 1989; Attenbrow and Steele, 1995). Similarly, archaeologists have used the natural movement and occupation of Aboriginal peoples along lake and river systems to locate and excavate some of Australia's better-known prehistoric sites. Large and ancient inland sites such as the dried out Lake Mungo in New South Wales, clearly show the enormous potential of lakes as repositories and protectors of Aboriginal sites and artefacts (White and O'Connell, 1982:l3-39).

In lakes, material culture is much less subject to disturbance from the scouring, grinding and dispersal associated with waves and surge in the ocean, although sites will still be affected by some natural and human processes (O'Halloran and Spennemann, 2002a, 2002b). Organic materials such as wooden implements may become buried in silt and have the potential for preservation over a very long period. The worked or worn surfaces of stone implements are also more likely to survive with less post-depositional abrasion – although wind induced abrasion may occur pre-inundation as well during any periodic exposure caused by drought or at other times when lake levels are low. To date there has been little work undertaken on Indigenous sites submerged beneath lakes in Australia, although two projects have demonstrated the enormous potential of lake-systems to hold and preserve a wealth of material.

The first Australian underwater archaeological survey of submerged Aboriginal sites was conducted in 1989 by Charles Dortch of the Western Australian Museum in association with underwater archaeologists from the WA

Maritime Museum (Dortch and Godfrey, 1990; Dortch et al., 1990; Dortch, 1997a, 2002b). The survey was conducted at Lake Jasper in south-west Western Australia and began in 1988 when the lake was at an uncommonly low level. Scattered stone artefacts and stumps of trees and grass-trees (*Xanthorrhoea preissii)* were found in their growth position leading to the conclusion that they had been part of a pre-inundation environment. The following year Dortch directed a team of maritime archaeologists in a diving survey that collected a total of about 100 stone artefacts from four sites. This was in addition to about 60 artefacts collected the previous year when the lake level was lower and three of the sites were exposed. A number of tree stumps located in the lake were from trees that died following inundation and radio-carbon dating provided estimates of c.3,400-4,000 years B.P. (Before Present), which was an important reference point for any artefacts found at greater depths.

The significance of the Lake Jasper survey was to confirm the potential for undertaking archaeological investigation of submerged Indigenous sites in Australia. The project also began the development of methods for the survey and analysis of these type of sites, including linking the investigation with other known terrestrial and intertidal sites in the region (Dix and Meagher, 1976; Dortch et al., 1990:50). Dortch also extended his work to include the development of methodologies for locating submerged prehistoric sites in coastal areas of Western Australia including the Perth Basin region (Dortch, 1991) and the Dampier Archipelago (Dortch, 2002a). These studies looked at the formation processes that would occur at submerged coastal sites and concluded that only certain site types, such as sealed cave or shelter deposits, or engraved rock art could reasonably offer potential for the recovery of undisturbed archaeological material (Dortch, 1998).

A 1994 study of the lake bed of Lake Victoria in New South Wales (Littleton et al., 1994) has provided important insights into the processes of inundation on Aboriginal sites. The sites recorded in the exposed lakebed show "long term use of the Lake Victoria foreshore during the Holocene period" (Littleton et al., 1994:xii), and included shell middens, stone artefact scatters, hearths and ovens, scarred trees, burial sites as well as contact sites (i.e., sites containing recycled materials from European occupation). Evidence of Aboriginal occupation has been located to the edge of the lowest recorded level of Lake Victoria. Earlier occupation and waterbourne transport is likely to have resulted in artefactual material also being distributed in the lower lake bed in addition to other later-period material being redistributed through taphonomic processes.

If so, artifacts are likely to be covered by silt and in an environment that is cool, low in oxygen and relatively free from the mechanical abrasion associated with wind, grazing, wave action and strong currents. Such an environment would be conducive to the preservation of organic materials such as sapling fish traps and other equipment constructed from wood. The survey notes the need for further investigation of "the lower lake bed" (Littleton et al., 1994:xiii) although the authors have not contemplated the employment of underwater archaeological survey techniques but suggest waiting for a time

when the lake falls to a lower level. There is clearly great potential to expand the findings of the 1994 study to include the area that remained inundated at that time. In this case underwater archaeological survey techniques would be an invaluable means of providing an even clearer picture of the extent, duration and nature of at least 18,000 years of Aboriginal occupation of this area.

Additional analysis of archaeological, geomorphic, stratigraphic and sedimentary information at Lake Victoria was undertaken in 1998 in order to develop a framework for long-term management of the lake (Hudson and Bowler, 1997:1-2). Although these studies only focussed on the cultural heritage of those areas of the lake bed normally exposed or exposed during drought, conclusions can be drawn about the likelihood and nature of Aboriginal sites in the area of the lake that is permanently underwater. This is a clear indicator of the need for future management studies to include consideration of the submerged cultural heritage of the lake.

Aboriginal and Torres Strait Islander use of coastal and inland water resources is associated with the development and adaptation of a range of techniques that are determined by factors such as geography and climate, the presence of food types, the availability of materials for manufacture of tools and structures, and the cultural norms of particular clans and/or societies. It is therefore not surprising that there are strong regional differences in the use (or non-use) and form of fish traps utilised throughout the continent. This diversity is highlighted in a range of archaeological studies that have been undertaken on fish traps in Australia since the late 1970s.

Fish traps exist in and, in some cases, below the tidal zone as well as in inland rivers. They occur in many forms throughout Australia and a number of off-shore islands and range from those built from organic materials like saplings, brush and grass, to those constructed from stone, or a combination of materials. Stone constructions can involve a single curved wall while others are intricate complexes, for example, those at Hinchinbrook Island in north Queensland, Brewarrina in western New South Wales and Lake Condah in Victoria. A central issue in stone fish trap identification lies in determining whether they have been built by Indigenous Australians or non-Indigenous Australians as construction techniques are, at times, very similar.

A significant regional study of marine and estuarine stone fish traps at Eyre Peninsula and the West Coast of South Australia was conducted by Sarah Martin (1988). This study combined a broad coverage of published and unpublished literature about all forms of Aboriginal fish traps and it is an important reference for work on this topic. Martin included discussion of the forms of fish traps used in various parts of Australia, which highlighted the extraordinary variety and regional differences in these structures. Research into regional fishing technologies (including fish traps) has also been undertaken by Stockton (1982) in Tasmania, Godwin (1988) in northern New South Wales, Walters (1989) in southern Queensland, and Dortch (1997b) in south-western Australia. More recently, another study originating out of South Australia, has looked at the environmental and cultural influences on fish trap placement in coastal Australia (Welz, 2002). Work has also been undertaken on techniques to

date fish traps using techniques such as pollen analysis (Head, 1989) and dietary information from associated terrestrial sites (Bowen, 1998).

Another significant study by Bowen and Rowland (1999) looks at Indigenous fish traps in Queensland. Importantly this study defines the difference between the terms "trap" and "weir". In essence, weirs are used as a barrier to seal off natural features (e.g., creeks, streams and coves) and traps create "holding areas" or have at least two walls joined at an angle. The study includes reference to studies of many sites, both of Aboriginal and Torres Strait Island origin, inland and coastal, and provides a valuable addition to the methodology and language for describing, interpreting and managing fish traps and weirs. The importance of adequate management is emphasised through the observation that traps and weirs are rare site types that are susceptible to development pressures. The final conclusion of the authors, however, is one that has an important bearing for all research in this area. This is the need for greater involvement of Aboriginal perspectives to overcome the inherent European bias in the ethnographic record to date and to ensure that there is an active role for Aboriginal and Torres Strait Islander people in the on-going management of these sites.

Figure 7.1. Indigenous stone fish traps at Brewarrina, New South Wales (photo courtesy of NSW Heritage Office).

Another significant study has been carried out on the stone fish traps of the Ngembah people at Brewarrina, New South Wales. Located over 600 kilometers inland the Brewarrina fish traps are among the most recognised and acclaimed Aboriginal structures in Australia (see Figure 7.1). They consist of a large complex of stone walls about one kilometre in length, which have been studied in some detail for the production of a Conservation Management Plan for the site (Hope and Vines, 1994). Correlating ethnographic evidence and European recording of the structures at the beginning of the twentieth century, the more recent research concludes that only about 5% of the original system survive in substantially intact form. By analysing this small but significant sample of the structure the authors develop a "use model" for the structure that combines the observed physical evidence with the hydrographic characteristics of the river. They also conclude that the Brewarrina fish traps exhibit a considerable degree of sophistication and economy in their design and construction.

Whether in the harsh, dry interior or in the rich, fertile coastal plains and river valleys or off-shore islands of Australia, submerged material culture is an important record of the many Indigenous cultures that together form Aboriginal and Torres Strait Island Australia. In partnership with custodians and Land Councils the recording, conservation and management of these sites is an important part of understanding the nature and diversity of Indigenous Australia. It is certain that many fish trap structures have been lost through dredging, reclamation, and development of shoreline facilities. In areas only a small proportion of the original sites remain (Dortch et al., 1984:100).

To date, archaeological and ethnographic studies of underwater and tidal Indigenous heritage have been largely site specific or region specific or a combination of both (e.g., Bowen and Rowland, 1989). This process has developed a wealth of research, and there is now an opportunity and a need to develop more comprehensive work on the subject. This would provide an overall perspective on Indigenous maritime heritage in Australia – with sections dedicated to Aboriginal and Torres Strait Islander cultures; coastal, estuarine and inland environments; watercraft, fish traps, eel traps, weirs, holding pens, tools and diet. Such a project would play an important part in extending understanding, awareness and support for the management, protection and interpretation of this important component of Australia's overall underwater cultural heritage.

7.3. AIRCRAFT SITE STUDIES

The study of aircraft in an underwater environment is a relatively recent development in the field of underwater archaeological investigation in Australia. These sites generally date from the 1940s or later and have been largely overlooked in terms of archaeological potential. Archaeological investigation of military aircraft in the UK has demonstrated that these crash sites retain important historical information and associations and important physical

evidence particularly in regard to internal components and advanced technologies. This situation is now becoming a focus of increasing interest with important pioneering work being undertaken in the Northern Territory, Western Australia and other Australian States (Jung, 1996, 2000, 2004; Souter, 2003; McCarthy, 2004c; Smith, 2004).

The management of aircraft sites is a matter of some priority as aircraft are the subject of considerable interest to collectors of aircraft parts. Their structural components are intrinsically fragile, particularly after immersion in water over a long period. This makes them extremely vulnerable to destabilisation through any physical disturbance of the site. As with any archaeological site, conservation issues are paramount and it is critical that these are fully explored prior to, during and following any site disturbance of aircraft wrecks. Smith (2004) has, in discussing the archaeological aspects of aircraft losses over water in New South Wales, considered issues that have application to the investigation of aircraft over a much broader area. These include:

> * the need to develop a historical framework for the area under investigation including sites associated with military conflict, accidents (including mechanical failure and mid-air collisions) and mass, post-war dumping of aircraft that had become superfluous to future military needs;
> * the value of thematic surveys to develop a perspective that is not limited to a specific site and allows the development of a broader archaeological context;
> * the need to consider the manner in which aircraft sites are located and the direct implications that this has for management options;
> * the importance of adequate statutory protection and the need for broader coverage consistent with the UNESCO Convention (2001), particularly in Australia's coastal waters;
> * the nature and behaviour of the physical fabric of aircraft and the implications of this on material conservation of the sites and artefacts; and
> * the popularity of recovering sunken aircraft and the issues that this raises for cultural heritage managers.

A recent paper (McCarthy, 2004c) on the archaeology of aircraft has begun the process of documenting important observations and generalisations concerning site formation processes, conservation science, the information potential of an aircraft archaeological site and management options. McCarthy observes that the archaeological significance of an aircraft can relate to a number of factors including the development of a "type" of aircraft, the practice of warfare, and the lives of those on board. He also notes that aircraft are frequently associated with human remains. This, combined with the relative recent ages of most aircraft sites, clearly marks many of them as being of considerable social sensitivity. The ethics of archaeology on aircraft sites therefore needs to include consideration of this factor along with the normal issues relating to site and material conservation. In some cases the very presence of human remains has become the motive for searching for previously unlocated

sites, such as recent searches for military aircraft lost in Lake Victoria in western New South Wales (Smith, 2004).

Smith (2004) also notes that a key factor in aircraft site formation in New South Wales has been the effect of fishing nets fouling aircraft wrecks during trawling operations. This has damaged and dispersed the sites over a wide area and led to fragmentary collections of disassociated portions that have been raised during the recovery of nets. Although underwater aircraft site formation processes are only just beginning to be understood, observations to date have noted some site formation characteristics. These include: engines from high-winged aircraft tend to fall propeller downward; aircraft in deeper water tend to be inverted (propellers facing down); and seaplanes with intact floats and hulls crippled by fire or explosion also tend to settle on the seabed in an inverted position, even in fairly shallow water (McCarthy, 2004c).

In considering the potential information that can be gained from aircraft sites, McCarthy (2004c:82) draws attention to the fact that there is a real danger in assuming that aircraft construction and history is so well documented that there is no archaeological information that can be obtained. He likens the archaeological examination of an aircraft to the forensic analysis that follows a modern day aircraft crash: "one could suggest that those who have been dealing with crash sites, especially those tasked with the recording, recovery and burial of lost service personnel, have been waiting for the archaeological world to catch up and to realise what important information can be gained". As with shipwreck sites, there are also aspects of life on board that are not well documented as they reflect the idiosyncrasies of the individual and adaptation to varying circumstances. He refers to the archaeology being a focus not just on technology but "also the people and the associated assemblage of cultural materials".

In 1995 Silvano Jung began detailed studies of the World War II Catalina flying boats that lie in East Arm, Darwin Harbour. The major challenge of this survey was to identify a number of similar aircraft lost in a common geographical location. Initially his studies focussed on a number of sites that appear in published reports (Fisheries Division, 1992; Lewis, 1992) but whose precise location had not been established. In developing the predictive model to help identify sites, Jung set out to distinguish differences between the models within the class. He also examined the historic record of the circumstances of the losses in order to predict the nature of the resulting archaeological record (Jung, 1996, 2000).

Figure 7.2. Remains of Catalina aircraft abandoned in mangroves in East Arm, Darwin (photo courtesy of Darwin Aviation Museum).

Jung provides a summary of the history of service and how they came to be in Darwin. In his analysis of existing reports and publications, Jung endeavoured to identify corroborative and contradictory evidence and conducted fieldwork to confirm a number of the sites. Not all sites were surveyed due to time limitations and the unauthorised removal of items such as a manufacturer's inspection plate compounded the difficulty (Jung, 1996:35). Jung's predictive model establishes the imperative for archaeologists to record those features of an aircraft that are diagnostic of a specific model and to analyse the site together with information from the historic record detailing the aircraft loss.

An even greater number of submerged aircraft sites have been studied at Roebuck Bay off the town of Broome, Western Australia (Souter, 2003; Jung, 2004; McCarthy, 2004c). In March 1942 an opportunistic Japanese air raid destroyed a concentration of Allied flying boats that had been involved in the ferrying of civilians from Java, killing 70-100 refugees and aircrew. Although six of these aircraft wrecks are well known from their location in the tidal foreshore at Roebuck Bay, the other nine sites have only been sought out during the 1990s. Concerned at the unauthorised removal of material by divers from what were effectively "war graves" the Western Australian Maritime Museum became involved in the protection of the aircraft remains. During 2001 the WAMM used its remote sensing equipment to locate and record the deeper water aircraft sites, including test excavation to determine the preservation of artefact material.

As a result of this work it became apparent that the deep-water aircraft sites were rich artefact repositories, rivalling many shipwrecks in the wealth of materials contained within and around them (McCarthy, 2004c:88). In addition to the identification and assessment of the fabric of particular aircraft, the location of some obvious refugee possessions at the sites a number raised a number of other research questions about human behaviour during war time. The work on the Broome aircraft has been extended to an oral history project with surviving members of the flying boat aircrews, the local display of artefact material, and a documentary film in the Prospero Productions "Shipwreck Detectives" series. As mentioned in Chapter 11 the detailed study of the sites has also helped protect the aircraft using the State's heritage legislation (*Heritage of Western Australia Act* 1990).

Different legislative provisions in the various Australian states protect submerged aircraft remains (primarily from the World War II period), although there remain some gaps in the coverage. As with all heritage sites, there are a number of management options for submerged aircraft including non-disturbance, controlled and non-intrusive tourism, or detailed recording and/or excavation. The appropriate choice is determined by a combination of ethics (including consideration of the 2001 UNESCO Convention), site specific conservation issues, funding and other resources. Although submerged aircraft have been recovered intact (McCarthy, 2004c:84) there should never be a simplistic view that it is a matter of slings, lift bags and getting the wreckage to the surface. Such action would most certainly disturb the archaeological context of artefacts within and surrounding the aircraft, and lead to a rapid increase in corrosion and degradation of the structural and other components of the remains.

7.4. WHARF AND JETTY SITES

As part of the infrastructure of ports and associated settlements, wharves and jetties are the focal point for the arrival and departure of shipping of all types. For some sites the associated depositional material, such as equipment, cargo and personal items, can be enormous due to the volume and frequency of vessels using the structure. Wharves and jetties are also the places where people congregate for leisure activities such as fishing, swimming or simply promenading. Consequently the adjacent waters may contain discarded or lost material associated with these activities, even when shipping use of the facilities has declined.

The awareness of the potential for archaeological deposits at these sites is not new, and in Australia has been included in the cultural heritage planning of some states for many years. However, a study of port-related structures in Western Australia, developed by the Western Australian Maritime Museum in 1993 (McCarthy, 2002), is currently the only published work that surveys a broad range of jetty sites and reports on the archaeological excavation of sites at Fremantle and Albany. As noted by McCarthy, the archaeology of the jetty has

enormous potential for further comparative studies with other excavations in Australia and overseas.

The first recorded work on port-related structures in Australia was the result of avocational projects in South Australia. During the 1970s the Society for Underwater Research (SUHR) carried out projects at the Morgan wharf on the Murray River (Ellis, 1979; Marfleet, 1980, 1983) and the Holdfast Bay jetty at Glenelg. The work at Holdfast Bay recovered over 5,000 artefacts and a catalogue was compiled. With little control over the recording of spatial relationships, however, the resultant collection of artefacts was compromised as an archaeological assemblage (Rodrigues, 2002a, 2002b). Renewed investigations of the site were undertaken by postgraduate students from Flinders University in 2000, which included the controlled excavation of test trenches and the development of simple and effective three-dimensional recording techniques (Lewczak, 2000; Richards and Lewczak, 2002:26).

The archaeological investigation of the Long Jetty, Fremantle in 1984 was arguably the first development-driven underwater archaeological excavation in Australia. It was associated with the America's Cup challenge in 1987 and the need to develop new marina facilities (McCarthy, 2002:9). As such, there were considerable time constraints, which when combined with the lack of an established methodology from any comparable studies, prevented the development of an ideal sampling strategy. Nevertheless, through a combination of airlift excavation in shallow areas and prop-wash excavation in depths of over 3m, approximately 15% of an estimated 50,000 square metres was sampled for the recovery of 1,143 artefacts. The location of the artefacts was plotted as accurately as the sampling technique permitted and the remains of pylons from the original jetty were also carefully recorded.

Given the scale of the excavation, the relatively low number of artefacts may be the result of the constraints associated with the excavation technique, the effect of bottle hunter activity over previous years and perhaps also the concentration of original deposits on the site. However, the importance of this excavation can be demonstrated by the positive outcomes that were a direct result of the project. These were: the increase in public awareness through communication, display and other interpretive measures; the realignment of the marina wall to avoid damage to the surviving pylons; and the introduction of legislative protection for the site under the *Maritime Archaeology Act* 1973 (McCarthy, 2002:12).

In 1994 the Western Australian Maritime Museum also carried out an extensive project on the Albany Town Jetty, funded through the proposed redevelopment of the facility (Garratt et al., 1995; McCarthy, 2002:12-18). Unlike the Fremantle example above, extensive archival research had already been carried out, there had been previous archaeological work at the site, and there were no time pressures. A number of 2 metre square test pits were dug across the site, including a larger "stepped trench" at an existing scour hole. The results have given a good understanding of the sub-surface geology of the site and the dynamics of the physical environment and the location of artefact material. The work has also proven the assumption that the discard of materials

at jetty sites extends for no more than 10 metres each side of the structure, and is particularly apparent at the seaward end where most recreational activities took place.

Infrastructure development has also been responsible for the first large-scale archaeological work on a wharf site in New South Wales. In 1990 the Department of Transport proposed an extension of Sydney's harbour ferry services to incorporate a service along the Parramatta River to Parramatta. As a requirement under the State's environmental planning processes a preliminary study was undertaken by Adam Wolfe (1991), which identified ten potential sites in the area to be dredged as part of the project. Following a detailed analysis of the report, test excavations were carried out at the Queen's Wharf and Refinery Wharf sites. The riverbed at the oil refinery site proved to be too toxic for extended excavation work and was also shown to have no substantial archaeological deposits.

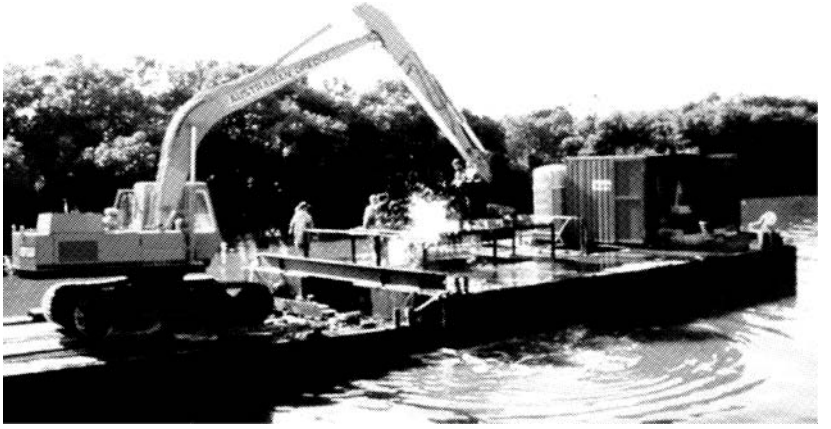

Figure 7.3. Rescue excavations at Queen's Wharf, Parramatta, NSW (photo courtesy of the Australian National Maritime Museum).

The test excavation at Queen's Wharf, however, demonstrated a high level of surviving depositional material and the Australian National Maritime Museum was commissioned to undertake further archaeological excavation (Bower and Staniforth, 1993). Using a backhoe because of the water conditions, an assemblage of over 10,000 artefacts was recovered, spanning a wide period of the 19th and twentieth centuries (see Figure 7.3). The collection included buckles, fob watches, lipsticks, bracelets, a necklace, cutlery, coins dating from 1827 to 1952, shoe and boot leather, shako badges from military head-dress as

well as building materials, animal bones, glass stoneware and earthenware and ceramics (including tobacco pipes). The Parramatta City Council subsequently installed part of the collection in its newly developed Heritage Centre where the material has become an integral component of its interpretation of Parramatta's history.

Other site specific work carried out in New South Wales has included the recording of a wharf and associated timber breakwater at Nerrani Point, as part of the development of a management plan for maritime archaeological sites in the Myall Lakes region (Nutley and Smith, 1999). In the far south of the State a steamship wharf at the small port of Merimbula has been studied by Donald Kerr (2003), including the recording of the underwater components of the site. In a further development of research into the archaeology of small coastal ports, David Nutley (2003a, 2003b) has looked at the Manning and Macleay Rivers and their accompanying ports in northern New South Wales. These studies have considered the wide range of factors that determine the developments of these types of ports and their infrastructure. These include the sourcing of commodities and their processing and transportation, the socio-economic status of residents, political considerations, and the environmental conditions that are peculiar to river entrances.

One of the most intensive studies of maritime infrastructure has been recently carried out at Port Arthur on the Tasman Peninsula, Tasmania. The state was originally developed as a penal colony, and the convict establishment operating at Port Arthur from 1830 until 1877 was the largest in Tasmania. For reasons of security and economy the transportation of goods and personnel at Port Arthur was primarily carried out by water, leaving a substantial infrastructure of land reclamation, moorings, slipways, wharves and jetties around Carnarvon Bay. First investigated by avocational archaeologists in the early 1980s (Cook, 1983) the Port Arthur Historic Site Management Authority established a project in 1999 to progressively map the area's submerged maritime features for future management purposes. During three seasons from 1999 to 2001 consultant Cosmos Coroneos and teams of volunteer divers located and surveyed dozens of features around the bay (Coroneos, 2004; Jackman, 2004), including the deployment of remote sensing equipment by a team from the Western Australian Maritime Museum (Green, 2002).

Wharves and jetties are the point at which cargo and people transfer from the land to the sea and from the sea to the land. It is also where people reach out to the sea to fish or to sit and contemplate. The wharves and jetties and any associated archaeological deposits are therefore strongly symbolic and embodied with considerable cultural significance. Their location makes them subject to impact from both environmental and development sources – the physical and chemical attack from the wind and the sea and the ever changing technologies and needs of port infrastructure. It is therefore critical that archaeological assessment of wharves and jetties is included within environmental planning processes and that the momentum to explore the archaeology of the jetty as a research area is promoted and extended.

7.5. CONCLUSION

Contrary to commonly held perceptions, the study of underwater cultural heritage in Australia is not restricted to historic shipwreck sites. Across the breadth of the country, there is a rich heritage of submerged archaeological sites that represent a range of human interaction with the sea, inland rivers and lakes. These sites vary in age from recent history to those of great antiquity. They are sites of significance to a number of cultural and other community groups including Aboriginal, Torres Strait Islander, European and other migrant communities. Much of the archaeological work on these sites to date has been restricted to those submerged sites that are periodically exposed, either through tides, drought or through the management of artificial water storage facilities. There has been less work on permanently submerged sites. However, archaeologists working at Lake Jasper, on aircraft sites in the Northern Territory and Western Australia and excavations of the seabed associated with wharves and jetties around the country have clearly demonstrated the potential for a wealth of information to be gleaned through the archaeological investigation of these sites.

Work to date has been carried out by archaeologists with a variety of specialisations and experience – including Aboriginal, historic and underwater settings. These studies illustrate the need to combine a variety of skills and perspectives in order to gain the best outcomes for future site management, academic research and public information. This opens up new challenges and possibilities for archaeological endeavour and hopefully will lead to new insights and an increasing body of published material that will assist in improving cultural heritage management practices as well as public awareness, enthusiasm and support for their protection.

Chapter 8

Nautical Archaeology in Australia, the Indian Ocean and Asia

Jeremy N. Green

8.1. INTRODUCTION

Nautical archaeology focuses on ships, ship design and construction and shipbuilding. Australian maritime archaeologists have played an important role in archaeological studies of ships in Australia and throughout the Indian Ocean and Asian region. In the 1970s, the Department of Maritime Archaeology at the Western Australian Maritime Museum completed a series of excavations of European shipwrecks belonging to the seventeenth and eighteenth century (Green, et al., 2004). This work lead to a widening of research horizons and studies began to be undertaken in Southeast and East Asia, relating to trade material and shipbuilding. At the same time, there was a regional need for training programs in these countries as a result of the growing impact of treasure hunting. As a result, the studies and training dovetailed neatly together and resulted in a long-term program focussing on nautical archaeology.

This chapter will consider nautical archaeology in the widest sense including experimental archaeology and the building of replicas, shipwreck formation processes and ship construction. It emphasises the international dimension of maritime archaeology as part of the "Australian approaches" that is the overall theme of this book. The construction of vessels that could sail over considerable distances dates back to the earliest times. The migration of aboriginal people from Southeast Asia to Australia some 40,000 years ago (the exact date is still not firmly established) is probably the first example. From what we know of the sea level at that time these peoples crossed the sea on a voyage to a destination that was over the horizon. The Pacific voyages of the Melanesian, Micronesian and Polynesian people represent the pinnacle of

oceanic exploration. Here, starting somewhere around 1600BC, oceanic voyages took place across the Pacific Ocean as far as Easter Island that was discovered about 300AD, the furthest known eastward extent of these voyages. While Westerners may celebrate their circumnavigations and explorations, one must remember that when Lief Ericson did discover Vineland in the Americas, it was at about the time the Polynesian people were making their last great discovery —New Zealand. They had already explored and discovered almost all the islands in the Pacific and, if they did not visit the Americas, they came very close to doing this.

So how were these voyages undertaken and what were the dynamics driving these people, be they Vikings, Polynesians, Dutch merchants, Portuguese hidalgos, Spanish priests, Italian merchants, or English buccaneers? Complex reasons underlie such a question; just as today it would be difficult to categorize and explain modern travel in the same way. Although such a question is beyond the scope of this chapter, we can attempt to describe the fundamentals of the vessels that served these voyages.

Firstly, in order to sail, one has to be able to have something that can float. The earliest floating devices would have been for short voyages, to cross rivers, to access food resources and other such simple needs. These boats would have included logs, rafts, reeds, waterproofed baskets, skin covered frames, bark canoes, inflated skins and other such things, depending on the availability of resources. Out of all these materials, it was only solid wood that enabled humans to enlarge and expand the size and capacity of vessels. We can show that the development of boats can come to a dead end because of the limitation of the materials used. Take the example of the skin boats of the Eskimos. The enlargement of the basic skin covered framework, called the *kayak* that carried one or two persons, could only be expanded to the *umuiack* that could carry a handful of people. Beyond this, it was impossible to increase the size of the vessels without access to timber so the progress of development came to a halt (Steffy, 1994).

Timber was the major resource that allowed the development of boats to ships. Obviously, tools were important to cut down trees and work the timber into shape. The early dugout and log-boat are known to have been constructed in the Neolithic Period using fire and stone tools. But once metal tools, particularly iron, became available, the opportunities for complex ship construction increased enormously. Of course, with the development of metals, the needs of societies had become more complex. This can be likened to the movement from the simple requirements of the coastal hunter-gatherers who needed access to marine fish resources, to the early urbanization, where trade played an important part in the economy and structure of society. There were obviously a number of dynamics. One would be the increasing need to supply food to an urban population. This meant, in coastal areas, having more efficient boats and techniques to access food resources and to reach new or more remote food resources. Additionally, there was the need to carry cargos over long distances. To make bronze, for example, one needs resources that do not always exist in the same place. So these resources need to be transported. We should not forget

that this was happening from the very beginning, we know, for example, that obsidian was brought from Milos in the Aegean to mainland Greece as early as 7000BC. Once ships of reasonable carrying capacity were developed, they became, in certain areas, an ideal and efficient way of transporting material. Thus, the Mediterranean became an important area of shipping and shipbuilding, particularly since most of the major cities lay close to the coast and thus were easily accessible by sea. Imagine the difference between sailing from Egypt to Athens and travelling purely by land. For a number of complex reasons, the Mediterranean became the centre of a huge shipbuilding industry that developed from the Bronze Age, here we have to recall Homer's *Iliad* and *Odyssey* and the siege of Troy; through to the fall of the Roman Empire.

Once societies became more sophisticated, the associated technological change enabled shipbuilding to rapidly develop. Obviously this evolved in different ways in different places. It seems that the first development was sewing planks of wood together, typically, in the areas where log boats or dugout canoes were the norm. A wash strake was sewn to the edge of the dugout to increase its displacement. It is interesting to speculate how this development occurred. We live today in a time when the building of wooden boats in the western world is becoming increasingly rare, having been largely replaced by iron, and now fibreglass and aluminium. In the earliest times, iron and copper would have been relatively expensive, where as trees and fibres were naturally available resources and so building ships without metal fastenings would have had a distinct economic advantages. Only when metal became cheap enough to be incorporated in ship construction, or when the need for stronger fastenings outweighed the economic considerations, would metal be required. And the latter is disputed since relatively large vessels could be built totally without metal fastenings. Sewing or stitching planks together was one option, another was to edge-join planks either with mortise and tenons or with dowels (a technique still used in Southeast Asia today). These techniques were labour intensive and needed skilled labour but could be achieved with a minimal toolkit using readily available, low-cost materials.

Of course, Europe and the Mediterranean has not always been the centre of shipbuilding and there are some important regions still to be discussed. Outside these regions we can identify several areas of significant shipbuilding tradition: the Indian Ocean, Southeast Asia, East Asia and the Pacific. The problem is that in this region almost no shipwrecks sites have been excavated archaeologically and those that have are few in number. Nevertheless, traditional wooden vessels are still being built in the region and boat ethnography is a useful way of looking at construction and the development of shipbuilding (Burningham, 1987, 1989a & b, 1993; Burningham and Mellefont, 1997). Apart from a few examples that date within the early part of the second millennium, we have to rely on ethnography and iconography for this study.

8.2. THE INDIAN OCEAN

It has been noted that vessels in the Maldive Islands have unusual features not commonly found in the Indian Ocean region (Millar, 1993). These features include thwart beams, carved lugs on the inside of the strakes to locate the thwart beams (this seems a remarkably similar construction to that used in Southeast Asia where the thwart beams are lashed to the lugs and referred to as a lashed-lug technique), strakes edge joined with dowels and other minor features. These observations raise a number of questions: is there evidence of changes in the boat-building techniques over time? Did the boat-building techniques develop independently as a result of technological changes over time, or were they introduced from elsewhere and if so, when? If changes were introduced, why were they adopted and what were the reasons for change and to what extent did local factors influence the adoption of these new techniques. In attempting to answer these questions, it is important to consider the environment that these vessels were built and sailed in, their function, the materials used in their construction and the skills and tools available. The construction of these elegant sea-going vessels raises a number of interesting questions. Firstly, it is widely accepted that the Maldive Islands were settled by people from Southern India or Sri Lanka certainly in Buddhist times, possibly earlier, the language having similar origins. At some point in time, however, the Maldivians adopted a Southeast Asian method of shipbuilding. It has been suggested that the Maldives may have been a "way-station" in the Southeast Asian colonisation of Malagasi and that there were extensive trading contacts between Indonesia and the Maldives. It may be through these contacts that the change in shipbuilding technology occurred (Manguin, 1985a & b, 1993, 1994).

In Sri Lanka there existed a number of unusual sewn vessels the *madel oruwa, madel paruwa* and the *yatra dhoni,* or *maha oru,* meaning "big outrigger canoe". The former two vessels are still widely used for beach seine fishing (Kapitan, 1987a & b, 1988, 1989, 1991). No example of the *yatra* now exists, the last example having been wrecked in the Maldives in the 1930s. The *yatra* ranged up to about 30 m in length, but was normally about 15–18 m, carrying 25–75 tons of cargo, usually averaging about 50 tons (Vosmer, 1993). In recent times the *yatra dhoni* was used as a coastal trader and for voyages to India and the Maldives. A model of this type exists in the Maritime Museum in Galle, Sri Lanka that was originally in the Kumarakanda Vihara at the port of Dodanduva and it is said to be over 100 years old. The model had been built by a boat-builder and exhibited the hallmarks of his care. For example, it was noted that the four hooked scarf joints in the keel–stem and sternpost structure were made exactly as they would have been on the real vessel with tiny locking wedges. Other elements were also executed with attention to detail: the frame fastenings were roved on the inside, the sewing together of the planks was detailed, and the general finish of the components were of high quality. In view of this attention to detail, it was thought that the accuracy of the model, both in scale and detail would make a fairly reliable source for documentation.

8.3. THE PHILIPPINES

The Butuan Boats in the Philippines represent an important part of the understanding of Southeast Asian shipbuilding technology. These vessels have a lashed lug construction, which has parallels in other parts of Southeast Asia, particularly in archaeological finds in Malaysia and Sumatra. The technique is still found in the Moluccan and Solar Archipelago and the Solomon Islands and also has parallels in Europe (Clark, et al., 1993: Green, et al., 1995). Nine boat-sites have been discovered around Bancasi, Libertad, in the Butuan area of Mindanao; three have been excavated: Butuan 1, now on display in Libertad City, Mindanao; Butuan 2, now on display in the National Museum, Manila; and Butuan 5, in the Butuan Region X Museum, Mindanao. The remains of Butuan 1 comprise a keel, a wing stem, two strakes on one side, one strake on the other and some fragments. The dowels are counter-pegged at every alternate dowel, except at the wing stem where they pegged at every dowel. The strakes are broad at the centre and the overall length of the remains is about 13 m. Butuan 2 is the best preserved of the three vessels. The remains consist of a keel and two strakes on one side and five strakes on the other. The remains suggest there were at least fourteen sets of lugs cut into each strake and the keel and set in rows across the vessel. Each lug had two pairs of lashing holes and in many cases the original fibre could still be seen in the holes. There were some small remains of a frame or frames, but badly degraded. A complex scarf joint system was noted at one end of the ship which ended in a complex stem or stern post (at this time it is still uncertain which was the bow and which was the stern of these vessels). At the other end, the strakes taper to a fine point. The lugs on the strakes were aligned across the hull, although there was a lot of variation in the size of the lugs and their separation. It was noted that the dowelling pattern for all the strakes showed that the dowels were arranged in a pattern of six, possibly reflecting that a template was used to mark the holes.

The remaining timbers of Butuan 5 are fairly degraded, with only a few of the planks in good condition. Those frames that remain are generally in better condition than the planking. The vessel was probably about 13 m in length, though the longest remaining portion, the keel, is about only 11.5 m. There are remains of eight planks on one side of the vessel and seven on the other. The dowels on each side of the lugs are counter-pegged with hardwood locking pins, square in section and slightly tapered. In the midships part of the boat, where there is a large space between lugs, every third dowel is pegged. On plank number 8, the lugs are different from the others, being carved in a triangular cross sectional shape. Unlike the other lugs, these triangular section lugs have no lashing holes. This was the last, or highest, strake remaining on the site, but the presence of dowels on the upper edge indicates this was not the highest strake.

8.4. CHINA AND KOREA

In China there has been a series of papers published in Chinese by the Museum of Overseas Communication describing the excavation and the subsequent analysis of the Quanzhou Ship (Green, 1983, Green et al., 1998). The hull is now completely rebuilt, with some minor modern additions to the damaged bow section and bulkheads. The remains, measuring 24 m long by 9 m wide, consist of the keel, part of the transom, twelve bulkheads and the sides of the ship up to, and slightly beyond the turn of the bilge (14 strakes on the port and 16 strakes on the starboard side). It is thought that the ship was originally 34 m long, 11 m wide and had a displacement of around 380 tonnes. The keel is made of pine and is constructed in three parts. The fore and aft parts slope upwards (the fore part more than the aft), and are scarfed longitudinally to the central part. In the vertical faces of both scarf joints, seven bronze cash and a bronze mirror were found. This is a *baosongkong* or longevity symbol, the coins were set in such a way as to represent the constellation of Ursa Minor, the mirror is thought to represent the Moon. The *baosongkong* have Daoist significance, bringing either good luck and fair winds, or representing the Seven Star Ocean where there are many dangerous rocks, the mirror is there to reflect light and ensure a safe journey. This tradition is apparently still continued today in modern shipbuilding, the stars represented by nails and the Moon by a silver coin. A square sectioned rabbet is cut on either side of the keel to accept the garboard strake.

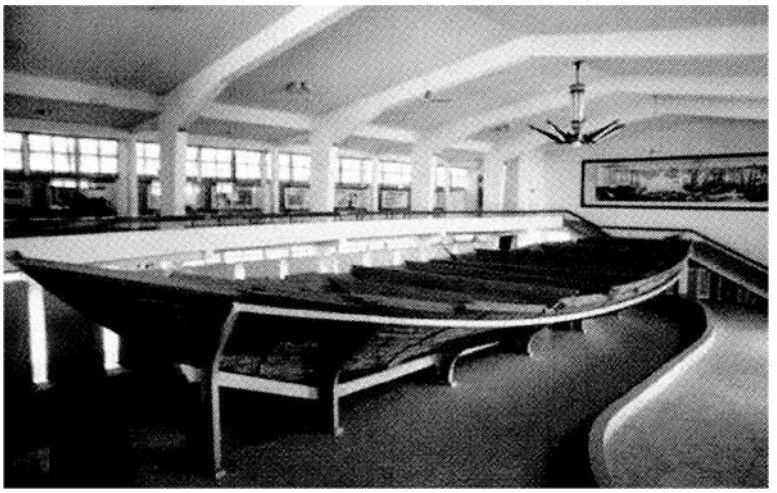

Figure 8.1. Hull timbers of the Quanzhou ship, Fujian Province, China (photo courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

In addition to the Quanzhou ship a further site has been excavated at Fa Sui near the city of Quanzhou. The Fa Sui site is constructed using the rather unusual wooden stiffeners. Essentially these stiffeners duplicate the function of the iron *ju*-nails used in the Quanzhou ship. They also appear in the Shinan Ship (below). The ship was partially excavated, the remaining unexcavated section lying under a modern day house. Another buried ship was found at the Wharf site at Ningbo. This site, of which the stern part is missing, is a vessel originally about 13 m long and is thought to date from the Song Dynasty. It consists of seven bulkheads, a main and fore mast step, eight strakes on the port side and four strakes on the starboard. The keel comprised of three parts, scarfed together, with an attached stempost and with *baosongkong* or longevity holes with coins, similar to the Quanzhou ship.

The excavation of the Shinan Ship in Korea with its immense ceramic collection, which to date, numbers some 16,000 items, took place between 1976 and 1982, by which time the main part of the cargo had been recovered and work had commenced on the excavation of the hull (Green, 1983; Green and Kim, 1989). Since then, the whole of the ship has been dismantled and raised, and is now undergoing conservation treatment at the Mokpo Conservation and Restoration Centre of the Cultural Property Research Institute. A number of reports have been published relating to the hull structure and a 1:5 scale model of the vessel has been constructed. The site is now dated by a wooden cargo tag with the date 1323 and the last date for the coins of 1310 (there were 26.8 tonnes totalling over seven million brass-bronze coins, the earliest date for the coins was AD 14).The remains of the ship include the keel, about 14 strakes of the starboard side and six strakes of the port side of the ship, part of the transom bow and a small section of the stern transom. The vessel has seven internal bulkheads creating eight compartments. There is a fore and main mast step and structure that is possibly part of the decking of the ship. The bulkheads forward of the mast step are supported on the aft side with frames and on the forward side with stiffeners. The stiffeners are pointed wooden pegs that penetrate each strake from the outside of the hull planking, thus locating the opposite side of the bulkhead to the frames and are attached to the face of the bulkhead (these stiffeners serve the same function as the *ju*-nail described in the Quanzhou and the Fa Sui sites). Aft of the main mast-step, the reverse situation occurs. The strakes are butt-jointed. In most cases the butt-joint is a lap joint, but on the garboard strake and on at least one other place the joint is a mortice and tenon joint. On the internal face of the butt-joints there are butt plates which sit over the top of the joints and clamp them together. In some cases these butt plates are set under a frame, indicating that the frames were put in place after the completion of the planking. The strakes are rabbeted clinker construction, with the rabbet cut out of the uppermost plank, on the lower inside edge. The bulkhead floor and planks have a rebate set in the joint to locate the edge of the bulkhead. In the fore part of the ship this arrangement gradually changes to a rabbeted carvel or shiplap construction which allows a flush rabbeted joint onto the transom bow.

The research model has been built by the Mokpo Conservation and Restoration Centre at a scale of 1:5 based on measurements made of the hull timbers. This model raises a number of complex and interesting problems, however, the model has some limitations. Firstly, because of the poor visibility on the wreck site, it was not always possible to establish the exact orientation of the pieces, thus in some cases their relationship is uncertain. Additionally, the plans of the timbers were made from individual measurements made on the timbers, but not direct 1:1 tracings. In spite of these drawbacks, the model is of great interest, and of course is just one step in the development of a complete understanding of the structure. One of the major problems that has not yet been resolved is that the keel has a distinct hog, the centre is 220 mm higher than the fore and aft ends, over the length of the keel. It is not certain at present if this is a feature that was incorporated in the construction of the ship, or is a result of forces on the hull structure after the sinking. It is expected that further work on the research model will resolve this problem. The scarf joints in the keel have a similar arrangement to the Quanzhou ship but with coins and a mirror placed on the sloping horizontal face of the joint rather than the vertical faces, as in the Quanzhou ship.

8.5. THAILAND

In 1975, a wreck site was discovered near the island of Ko Khram in the SE of the Gulf of Thailand. The excavation of this site was the beginning of an underwater archaeology programme in Thailand. Since then a number of sites have been examined in the Gulf of Thailand, some have been completely excavated, some have only been surveyed (Atkinson, *et al.*, 1989). The Ko Khram site was excavated by a Joint Thai-Danish team from 1975 to 1977 (Green, 1981). A very large quantity of Thai ceramics was recovered from the site (in excess of 5000 pieces). It has been stated that the Sukhothai and Sawankhalok ceramics account for between 60 and 75% of the total ceramic cargo, the remainder probably being Vietnamese and some of an un-clear origin. Sisatchanalai celadons include plates and bowls with tubular support marks on the base, jarlets, eared bottles, potiche and small bowls. Earthenware rice pots and unglazed stoneware storage jars and basins are thought to have been produced at kilns north-north west of Lopburi. The underpainted fish and floral designed plates and bowls were produced in the Sukhothai kilns. Green glazed bowls with an unglazed ring in the inside centre are thought to be Cham. A blue and white jarlet and a saucer are thought to be Vietnamese. In 1987, the site was visited to obtain timber and ceramic samples. It was noted that the site is still remarkably intact, with no evidence of recent looting; in fact the site is one of the largest and best preserved that has been noted in the region, and certainly warrants further investigation at some future date. In a number of places the ceramic material was still stacked in rows.

The Ko Kradat Wreck in Trat Province can be definitely dated by a blue and white porcelain base sherd bearing the inscription *Da Ming Jiajing Nian Zhi*

(made in the Jiajing reign of the Great Ming Dynasty (1522-1566)). Other porcelain sherds, suggest a date from the Wanli period 1573-1619. The presence of these Chinese ceramics clearly dates the Sawankhalok products which were encapsulated together with the porcelain at the time of the wreck, indicating that the Sawankhalok kilns must have been producing in the mid-16th century, with strong evidence for the latter half of the century (Green, 1980; Green & Harper, 1982; Green, *et al.*, 1980). Ceramics which can be definitely attributed to Sawankhalok include small cover boxes with a thin glaze fusing the base to the lid, indicating that the article had never been used and had probably come straight from the kiln.

The Pattaya site consists of a 9 m length of the hull with a maximum width of 4.5 m with six bulkheads together with eight strakes on either side of the keel. The hull profile had a marked V-shape next to the keel (Green & Harper, 1983; Green, *et al.* 1983). This flattened out, finishing in an upward curve at the turn of the bilge. Here, obviously, the continuing sides of the ship had broken away and disintegrated. The keel consisted of a large, apparently single timber, 300 mm wide, with 45° bevels on the upper edges, giving an upper keel surface of 200 mm. The planking consisted of three layers, the inner was 70 mm thick, whilst the second and third layers were 40 mm thick. The garboard strake of the inner layer of planking was attached to the bevel on the upper part of the keel by a series of dowels, 20 mm in diameter, spaced 160 mm apart. It was noted that the strake-scarph joints all occur under bulkheads and do not have any logical system to them. Traces of six bulkheads were found on the site. The bulkheads consist of two components; the bulkheads themselves and a lightly constructed, bevelled frame, locating and securing the bulkhead to the hull. In all cases, the bulkhead frames were on the side of the bulkhead nearest the midships. The bulkhead consisted of a number of parallel planks 70 mm thick, dowelled together with round pegs in the same manner as the strakes of the hull planking. The ends of the planks were shaped so that they fitted flush with the hull planking, and appeared to be lightly nailed to the planking at the narrow ends. There was no evidence of dowels being used to join the bulkheads to the hull. The lowest bulkhead plan is regular in section, lying symmetrically over the keel. The extreme ends of the planks were also trimmed in the same way as the scarph-joint of the planks. The water-ways consisted of two circular holes, 110 mm in diameter, lying on either side of the keel. The frames lodge against the side of the bulkhead nearest the midships. The central frame was a floor in all cases except for bulkhead 3, where it was a half frame. In this case the two half frames were clamped with a chocks. In all other frames, the first futtocks were scarphed to the floors. A maststep was located on the southern side of bulkhead 6. Two large rectangular holes, 110 mm by 260 mm, are cut 90 mm deep, equidistant from the mid-line which were the recess for the tabernacle of the mast. On the west side is a round hole 110 mm in diameter which is inclined at about 50° towards the centre, possibly a pump hole. A further two small notches, 90 mm by 80 mm, are located on the southern edge of the top surface, which were possibly for longitudinal braces. The mast step has two water-way holes similar to the other water-way holes in the other bulkheads.

The Ko Si Chang 1 Wreck, Chonburi Province can be dated by a Chinese blue and white porcelain bowl bearing the inscription *Da Ming Wanli Nian Zhi* (Made in the Great Ming Year Wanli). Wanli reigned from 1573-1620 (Green, 1983; Green, *et al.*, 1987). Non-ceramic items from this site include lacquer ware with a dragon motif, pyramidal-shaped lead ingots as found on the Ko Si Chang 3, Pattaya and *Risdam* (Green, 1986) sites, a copper bowl, lidded copper lime container (complete with lime remains and a stirrer), wooden bungs, sappanwood, (also recovered from the *Risdam* site), musket stock and a grindstone. The Ko Si Chang 2 site is interesting because the ceramics from the site are complex and include material thought to originate from Thailand, Southern China and a small group of uncertain origin (Atkinson, *et al.* 1989). Also recovered was a portion of an oriental style oven. Metal objects include a square lead ingot and a Chinese cash coin. The survey of hull of the Ko Si Chang 2 site showed some unusual features not previously encountered on vessels in the Gulf of Thailand. Firstly, the ship's planking is joined with iron nails driven diagonally from about the middle of the inside of the hull planking, downwards through the abutting surfaces into the next strake. This method of fastening is unknown in the region; Southeast Asian fastenings of adjacent strakes is usually edge-joined dowels and Chinese and Korean is diagonal iron nails from the outside. On this site there is no doubt that over the strakes remaining, the nails are driven from the inside. This seems to be unusual, since as hull cross-sections are invariably concave, the angle the nail is driven will be more difficult from the inside than the outside. There has to be an advantage to fastening in this manner, but it is not immediately obvious. It is unfortunate that the site has suffered badly, both from the effects of trawler activity and from looters. It was reported, during a brief inspection of the site in 1985, that timbers were projecting from the seabed at an angle of about 20°; this was almost certainly the result of a trawler net snagging the end timbers on the site and ripping them up. It is thus not possible to determine what happened on the strakes further up the hull. One possibility is that the vessel was flat bottomed and this method of fastening was used in this area, but changed at the chine. The two outer strakes that remain of the inner planking are narrower than the other planks and consequently the nails are driven into the plank at the outer edge.

The Ko Si Chang 3 Wreck, Chonburi Province was excavated in 1986 by a joint Thai-Australian-SPAFA team. Unlike many other sites it has not suffered at the hands of looters. Trawling activities disturbed the surface to an extent. Despite this a very accurate estimation of the quantity of the cargo and its placement could be assessed. The hull structure consisted of the keel, the planking (at the maximum six strakes on the starboard side and five strakes on the port), the remains of nine bulkheads and the mast step. It is evident that the site, and in particular the hull structure, has been damaged by bottom-trawlers. There is also evidence that the stern part of the structure has collapsed. The keel appears to have separated at the scarf joint, causing the stern part of the keel to drop, this has resulted in the garboard strakes separating from the keel. At the stern on the port side, the remains of six planks were discovered, lying below the main planking. These planks ran at an angle to the keel, but it is thought that

they are part of the outer planking which has become detached from the inner planking. Additionally, three unusual blocks, sitting on the keel were noted. These are thought to be associated with the complex scarfing arrangement on the keel. The ship would have been slightly more than 20 m long, with a beam of about 6 m. Compartments were about 1.2 m wide, suggesting about 16 over the length of the ship. It seems that the ship may have been quite old at the time of the loss because of the evidence of repairs. In particular, the scarf on strake three (starboard) between bulkheads 51 and 52 shows evidence of a repair. Also, strake two, on the port side, has two scarf joints very close together (between bulkheads 45-46 and 46-47) less than a metre apart.

8.6. EXPERIMENTAL ARCHAEOLOGY

Although the Asiatic research themes concentrated on studies of artefact assemblages and their relationship to international trade in the early period of European expansion into the region, another dimension of study was beginning to emerge. In the early 1980s there was a growing interest in building of full-scale replicas to study the methods of shipbuilding and to understand how ships were built and how they were sailed. This work resulted in a growing study of shipbuilding technology and sailing performance. Reconstructions ranged from the 4th century BC Kyrenia ship to a series of reconstructions to commemorate the Columbus centenary. This research, when based on principles of scientific rigor, lead to a better understanding of the dynamics of shipbuilding. Most interesting was the opportunities, presented by maritime archaeological findings to compare and contrast the practical shipbuilding with the archaeological findings, and where appropriate, to then test this against the historical and archival record.

When the *Batavia* was first excavated in the 1970s, it was found that the ship was constructed either shell first, or at least partially shell first. This was somewhat an unusual discovery at the time and when it was announced at the Boat and Ship Conference in Amsterdam in 1988, it caused a stir (Green, 1991). Subsequent research has shown that, in fact, many ships in the seventeenth century were built shell first or composite. There are several contemporary illustrations of shipyards showing vessels being built in this manner; one of the latest being a view of the VOC shipyard in Amsterdam by Blockhuisen dated to the 1690s. At about this time a group in the Netherlands decided to build a full-scale replica of the *Batavia* in the town of Lelystad. This was built by Willem Vos and was based on contemporary historical information on Dutch shipbuilding practices (Parthesius, 1996). All that was known about the *Batavia* was the account of the Directors of the VOC that two vessels were to be built and they were to have a specified length breadth and depth. No other written information has been found regarding the *Batavia* so that Vos's work was based entirely on the few shipbuilding manual of the mid- to late – seventeenth century. Unaware of the discoveries in Australia, Vos started to build the *Batavia* replica in a frames first manner, assuming that this was the normal method of the early

Figure 8.2. Reconstruction of the hull timbers of *Batavia* at the Shipwreck Galleries of the Western Australian Maritime Museum (photo courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

seventeenth century shipbuilders. It was therefore particularly interesting to find that it was possible to compare and contrast the archaeological findings with the results of archival research (Green and Parthesius, 1989).

The other interesting reconstruction of a contemporary VOC ship was the *Duyfken*, built in Fremantle in 1998 (Burningham, 1997, 2000, 2001; Burningham and de Jong, 1997; de Winter and Burningham, 2001). This vessel, unlike the Lelystad *Batavia*, was built in the shell first manner. There is almost no information available on the construction or even the size of the vessel. Much of the research work concentrated on detailed study of a contemporary illustration of the vessel and of similar vessels of the time. Unlike the *Batavia* replica, that has almost never sailed, the *Duyfken* went on to sail to Indonesia and then to the Netherlands despite the fact that the *Batavia* is a much larger vessel (60 m) compared with the *Duyfken* (20 m).

8.7. CONCLUSION

This chapter has covered in a relatively superficial way the involvement of Australians in some of the work carried out as part of a wider maritime archaeological research program. It is always interesting that the more one examines an archaeological research project, the more questions that appear.

From the early work on the *Batavia*, the research lead into a number of new and exciting fields. We were able to learn more about the vessel and its context as an early vessel involved in the European trade expansion into the Far East. Examining just the European dimension, however, was only part of an attempt to understand the whole complexity of Asiatic trade, that the Europeans were, at that time, only minor players. Understanding of how European ships were built, lead to attempts to understand how Asiatic vessels were built. This is only just the beginning of what will be an ongoing, and probably an everlasting, research programme – to understand our past. Cicero wrote: "Not knowing what happened before you were born means being a child forever. For what is human life unless it is interwoven with the life of our ancestors, by the memory of ancient history? Moreover, recollecting antiquity, and providing examples from it, provides authority and credibility to one's discourse, as well as enormous pleasure."

Chapter 9

The Ethics and Values of Maritime Archaeology

Cos Coroneos

9.1. INTRODUCTION

Which comes first – the data or the dollar?
(Babits and van Tilburg, 1998:73)

The question presented above when posed within the context of a book on maritime archaeology invariably turns the reader's mind towards the sometimes vitriolic debate between archaeology and treasure hunting (see Babits and van Tilburg, 1998:73-111). This is not the only ethical issue, however, that maritime archaeologists confront in their careers when it comes to the question of the data versus the dollar. The maritime archaeologist employed in a government cultural heritage agency continuously weighs up which of the hundreds of threatened shipwrecks under their jurisdiction will be the recipient of limited government funding. Any maritime archaeologist excavating a site is always calculating how much and which material can be responsibly recovered based on the funding available for storage and conservation.

A contract maritime archaeologist, when submitting a competitive tender for a site that is to be destroyed by development, has to set costs to ensure that archaeological best practice is followed, but not at the expense of bankruptcy. These examples relate to decisions being made based on values. The essence of any discussion on ethics and maritime archaeology is about values. The value of a shipwreck is understood in terms of how much money individual items can be sold for, or the value of a shipwreck as it relates to grappling with understandings of our humanity and its contribution towards the refining of a

cultural identity (see Wildesen, 1984). The examination of such values provides the focus for this chapter.

The maritime archaeologist in Australia when applying their craft on shipwrecks does so within the framework of cultural heritage legislation. Legislation and cultural heritage management are discussed in detail elsewhere in this book (Chapters 10 and 11). Aspects of cultural heritage law in Australia and the derivative guidelines and principles created by governments to administer the law will be examined here. There are two reasons why this is necessary: firstly, because at the core of cultural heritage law lies the principles and ethics of archaeology; and secondly, the majority of maritime archaeologists employed in Australia work in government agencies that have the responsibility of enforcing heritage legislation. This has resulted in maritime archaeologists preparing guidelines and protocols for the management of underwater cultural heritage (Henderson, 1994: Heritage Office, 1994).

This has been done in sympathy with community expectations, as expressed through law. As a result the ethics of maritime archaeology in Australia are built upon the foundations of the basic principles of archaeology topped by a superstructure, which emphasises the preservation of the physical remnants of the country's history and cultural identity. This has led to maritime archaeologists in Australia acting as a profession that is entrusted by the community to manage and safeguard one component of the nation's cultural assets, rather than a minority lobby group.

Returning to the question posed at the start of this chapter, it is unfortunate that at the start of the twenty-first century no work on maritime archaeology can escape making reference to the issue of the monetary exploitation of shipwrecks. In Australia the battles over maritime archaeology versus treasure hunting were largely fought and won in the 1970s. How this was done will be briefly addressed as it is central to the development of ethical standards in Australian maritime archaeology. It is unlikely that such a debate will become a point of contention again because shipwrecks with cargoes worth millions of dollars are very unlikely to be discovered within Australian waters.

On a regular basis, however, material recovered from shipwrecks overseas for the purposes of sale is bought to Australia for auction. In March 2004, for example, 17,000 ceramic objects from the Binh Thuan shipwreck were sold at auction by Christies in Melbourne with the approval of the Vietnamese and Australian governments (*The Age* 21 Feb 2004 and 2 April 2004).

Apart from the antipathy that Australian maritime archaeologists have towards the sale of artifacts there is a growing concern that such activities blur the distinction between treasure hunting and maritime archaeology, particularly as some of these ventures emphasise that the material was excavated in an "archaeological manner". Such claims are interesting in that they acknowledge that promoting material for sale that has been mined from a shipwreck is aincreasingly unacceptable while using the words "archaeology" and "archaeologist" in association with their enterprise gives the impression of responsibility, credibility and legitimacy. Although treasure hunting does not take place in Australia there is still a perception in some quarters that maritime

archaeology and treasure hunting are one and the same. It is not difficult to see that the relatively large amount of media coverage that treasure hunters receive, especially those with beautiful objects on hand for view, does have an effect on public perceptions of maritime archaeology.

Australian-trained maritime archaeologists are now working in other countries as underwater cultural heritage managers, educators or consultants, usually on collaborative projects with national institutions in the host country. Situations have arisen where the treatment of underwater cultural heritage as practised in another country does not meet the ethical standards and practices observed by maritime archaeologists in Australia. This last point returns to the subject of this chapter – ethics. It illustrates the issue clearly – whether archaeological ethics are universal or whether they are dictated by a host culture. In these circumstances is a maritime archaeologist required to adhere to an ethical code of practice? Are they indivisible? More to the point, can maritime archaeology, or any archaeology for that matter, be practiced in an ethical vacuum, that is, without reference to principled standards as they relate to the ultimate goals of archaeology? Can such a person engaged in such behaviour be considered a maritime archaeologist?

Cultural heritage management is discussed in detail elsewhere in this book (see Chapter 11), but it is necessary to make some reference to it here as it has had a tremendous effect on the ethics of maritime archaeology in Australia. This is mostly due to the fact that maritime archaeology in Australia did not arise out of the country's academic institutions. Looking back on the first two decades of the profession in this country, Graeme Henderson observed that:

> ...there are several reasons for the successful train of events in Australia. In the beginning, 1963, the first important shipwrecks were found by concerned citizens – divers with a sense of responsibility towards what they saw as a part of Australia's history. By chance, the finders were closely associated with interested journalists. So from the outset two necessary ingredients for the beginnings of maritime archaeology were present – a grassroots pressure group combined with media support. In addition the economy was growing, and a State institution (the Western Australian Maritime Museum) was prepared to accept the responsibility for historic shipwrecks (Henderson, 1986:2).

The effective incorporation of maritime archaeology into the sphere of cultural heritage management has not resulted in a clash of principles. Both archaeology and cultural heritage management emphasise the values of the physical remnants of the past in terms of their historical, social, archaeological, technical, interpretative and scientific significance. Archaeology has been established as an integral component in the management of this heritage, as demonstrated in the *Guidelines for the Management of Australia's Shipwrecks*. It states in the introduction that there is a clear need for the development of "appropriate management practices based on accepted archaeological principles" (Henderson, 1994:1).

One of the pillars of cultural heritage management is the preservation of archaeological sites and artefacts – in the form of knowledge – for the benefit of

present and future generations and making this knowledge relevant to the wider community. The incorporation of the majority of Australian maritime archaeologists within this outlook has meant that these inherent attributes within the profession – the preservation and dissemination of knowledge – have been accentuated, at the expense of pro-active enquiry and research. It has also instilled a sense of guardianship over the submerged cultural heritage; to be protected from relentless entropy and the "ignorance" from the very same community from which it serves.

9.2. THE AIMA CODE OF ETHICS

This digression into cultural heritage management serves a purpose in the discussion on ethics because of its influence on Australia's only deontological code for maritime archaeology; the Australasian Institute for Maritime Archaeology *Code of Ethics*. At about the same time that AIMA was founded (1982) graduates from the one-year graduate diploma course in maritime archaeology were establishing maritime archaeology programs in Australian states outside the existing Western Australian program. AIMA was originally composed of the practising maritime archaeologists of the day, graduates and shipwreck enthusiasts. Government maritime archaeologists and their philosophies have largely influenced AIMA from its inception and the AIMA Executive, until 2001, had always been based within a government agency. AIMA still relies on government agencies to provide in-kind support but the administration of the AIMA Executive is now spread across the country, facilitating a more national approach to the organisation.

AIMA did not develop a code of ethics until 1989 (see Staniforth and Hyde, 2001:224-226), and the apparent delay in establishing such a code until seven years after the founding of this organisation might seem odd. One would assume that for a profession such as maritime archaeology, with the perceived cloud of ethical ambiguity always present, that a code of ethics would have been produced by AIMA at the same time as its constitution. The reason such a document was not produced until much later was because it was not seen to be needed at the time. This stems from the fact that the majority of those who found employment in maritime archaeology in Australia throughout the 1980s, had been trained by the Western Australian Maritime Museum. The maritime archaeologists scattered around the country were cohesive in outlook and ethos through their common training, and their employment within agencies that administered strong cultural heritage legislation.

The AIMA *Code of Ethics* was developed at a time when Australian maritime archaeologists, and AIMA members, were becoming active in international organisations such as the International Council for the Conservation and Restoration of Monuments and Sites (ICOMOS). It was also during this period that some maritime archaeologists were flirting with questionable projects overseas. The AIMA *Code* draws heavily from a number of sources, the most prominent being the Society of Professional Archaeologists

Code of Ethics and Standards of Research Performance (SOPA, 1984) and the Australia ICOMOS *Charter for the Conservation of Places of Cultural Significance* (*The Burra Charter*).

The first statement or sub-article of the AIMA *Code* is the archaeologist's commitment to the public, before colleagues, clients, employers or even to archaeology itself. The article also makes references to "unethical" activity. There is, however, no definition of what is unethical as it is inferred that the other sub-articles in the *Code* are *de facto* definitions of what is ethical. Underpinning this article and the remainder of the *Code of Ethics* is the Australia ICOMOS *Burra Charter* (Australia ICOMOS, 1999). The *Burra Charter* provides guidelines for all forms of cultural heritage management in Australia, and with regards to the recovery of objects or excavation Article 28.1 states:

> Disturbance of significant fabric for study, or to obtain evidence, should be minimised. Study of a place by any disturbance of the fabric, including archaeological excavation, should only be undertaken to provide data essential for decisions on the conservation of the place, or to obtain important evidence about to be lost or made inaccessible.

It is surprising to note that there is no direct reference in the AIMA *Code of Ethics* relating to the recovery of artefacts from sites for the primary purpose of selling them on the open market. The absence of such a statement is all the more interesting in that one of the sources of inspiration for the AIMA *Code of Ethics*, the Society of Professional Archaeologists, has such a statement inserted in their document. The silence on this point in the AIMA *Code* at first appears baffling but there are two points that should be taken into consideration.

Firstly, the linking of the AIMA *Code of Ethics* to the principles and articles of the Australian ICOMOS *Burra Charter* sends an emphatic, albeit encrypted, message that the organisation is totally opposed to disturbance and destruction of shipwrecks for reasons other than those stated in the *Burra Charter*. The second point deals with the context in which the *Code of Ethics* was created. Throughout the 1980s, when AIMA was being established, the practising maritime archaeologists within Australia were administering laws protecting the cultural values of shipwrecks and used the principles of the *Burra Charter* to apply those laws. The AIMA organisation and membership base was essentially confined to Australia. When Australian maritime archaeologists worked overseas it was often in a training capacity, hence the values and philosophies as practised in Australia were exported. Consequently an explicit statement in the AIMA *Code of Ethics* denouncing treasure hunting was not seen as necessary. However, as a number of AIMA members now live and operate out of Australia, and may be subject to different heritage laws and values, the organisation has recognised the need to revise its *Code of Ethics* and is currently undergoing this process.

9.3. WHO IS A MARITIME ARCHAEOLOGIST?

Up to now the term "maritime archaeologist" has been used throughout this chapter without clarification. Who is considered to be a maritime archaeologist in Australia? Professions like medicine, engineering and architecture require candidates to acquire a considerable body of experience and references above and beyond their university qualifications before they can call themselves doctors, engineers and architects. Often a body representing the profession can only award such accreditation. Archaeology in Australia is not that sort of profession.

Apart from maritime archaeologists who have trained as such at university, there are individuals who claim to be maritime archaeologists with either no training or limited experience in the subject. Most of these fall into two groups: university trained terrestrial archaeologists with or without SCUBA certification; and avocational divers without qualifications. The apparent motivations for doing so are either to exploit the temporary unavailability of a qualified maritime archaeologist to undertake a job, or the sincere desire to be a maritime archaeologist. In both cases there has often been a profound underestimation of the complex and wide range of skills required by a maritime archaeologist.

With respect to the terrestrial archaeologist with SCUBA certification, there is often a lack of knowledge of site formation processes and of the behaviour of materials in an aqueous environment. There is also a limited understanding of what may be achieved in a practical and efficient manner underwater as well as the range of tools and techniques that are available. Understanding the effects of waves, wind, depth, visibility and current on underwater archaeological investigations is often poor. For avocational divers, it is often the case that they have been involved in field projects run by maritime archaeologists where they are directed to do certain tasks or asked to solve technical problems that the maritime archaeologist cannot do. In these situations the impression is given that all there is to maritime archaeology is compiling lists of shipwreck events, looking for shipwrecks and recovering artefacts. They often do not see the other side of archaeology, which involves the formation of a research design, developing fieldwork methodology relevant to archaeological principles, the wider theoretical background or the tedious collation and manipulation of field data and the rigours of writing-up the results and publication.

The ambiguity of who is a maritime archaeologist also partly arises from the definition of what type of sites maritime archaeologists are concerned with. Australian maritime archaeologists consider littoral archaeological sites as falling within this sphere (see McCarthy, 2003; Nash, 2003a), hence the statement that to be involved in maritime archaeology one does not need to be able to dive. To be regarded as a maritime archaeologist in Australia, however, apart from archaeological training, one has to have a very good understanding of the underwater environment. This also does not necessarily require one to dive.

Indeed a maritime archaeologist does not cease to be a maritime archaeologist if for reasons of health they are prevented from diving.

The ambiguity over recognised qualifications also arose because the maritime archaeologists initially employed in Australia did not have specific training or field experience in underwater archaeology. These pioneers in the discipline were largely self-taught, as there were no training courses in maritime archaeology available at any level in the country. This situation continued until 1980 when the first graduate diploma course was run in Western Australia. However, these courses were offered infrequently throughout the 1980s and 1990s, and the supply of graduates willing to take up maritime archaeology as a career could not keep up with the demand for new maritime archaeology positions being created. With Australian universities now producing undergraduates and postgraduates with maritime archaeology training there is no reason today why suitably qualified people should not fill new positions.

The preamble to the AIMA *Code of Ethics* contains a definition of what AIMA considers to be a maritime archaeologist. The definition recognises that there are currently individuals who have held positions as maritime archaeologists for many years but have had no formal training. It is interesting to note again the close connection between the discipline of maritime archaeology and cultural heritage management – in that the second part of the definition emphasises the evaluation/preservation elements of the discipline rather than scholarly accomplishments.

> *Definition: A Maritime Archaeologist is a person who:*
>
> - *holds an honours or other postgraduate degree in Maritime Archaeology or in another area of Archaeology with a major in Maritime Archaeology; or*
> - *has gained Australian State or Commonwealth recognition as a maritime archaeologist plus a minimum of two and a half years of full-time professional experience applying the theories, methods and practices of Maritime Archaeology to the identification, evaluation, documentation or treatment of maritime archaeological sites in Australia and its Territories (one year experience in maritime archaeology must be under supervision of a maritime archaeologist); and products and activities that demonstrate the successful application of acquired proficiencies to the practice of maritime archaeological preservation.*

The discussion over who is and who is not qualified to be considered a maritime archaeologist is really an argument over the means rather than the end. The end result of any archaeological endeavour is that it is done well and complies with the philosophy, principles, standards and statutory requirements of the discipline. An individual with no formal training in maritime archaeology may produce a good result but the outcome is by no means certain unless they have considerable demonstrated experience. A university trained maritime archaeologist does not guarantee quality but at least it is understood that they have learnt the basics.

9.4. CONTRACT OR CONSULTING MARITIME ARCHAEOLOGY?

Contract or consulting archaeology is often seen as operating in a grey area, on the edge of archaeological ethics. The absence of a secure income, and payment mostly from developers – essentially proponents who are impacting on the cultural heritage – invite both pressures and temptations to compromise the quality of the archaeological work to be undertaken. Furthermore, consultants are often involved in the processes that lead to the destruction of archaeological sites through development. A maritime archaeology consultant working within Australia is in effect a private or "outsourced" arm of the government agencies whose job it is to administer cultural heritage law (see Wolfe, 1997). The consultant's main task is to assess the impact of a proposed development on the known and predicted archaeological heritage and to advise clients on their obligations under the legislation as well as recommending measures to mitigate impacts.

The consultant works within the aegis of existing heritage law and is guided by the articles of the Australian ICOMOS *Burra Charter*, that is the impact assessment is measured by the cultural significance of the heritage. Sites or components of sites may be considered so significant that it is recommended they be left undisturbed. In other situations the heritage is not considered significant enough to warrant preservation, but significant enough to require that it should be "virtually preserved" through archival recording in the form of survey or excavation. The consultant does not work in isolation; government archaeologists examine assessments and applications for permits to excavate or disturb sites. In effect, the consultant is doing the work that the government archaeologists do not have the time or funding to undertake themselves. Assessments and permit applications have to be presented in great detail and the transparency of the process of analysis and argument clearly demonstrated, so that the government archaeologists can come to their own conclusions as how best to manage the heritage. This results in either concurring with, lessening or strengthening of the consultant's recommendations.

Although the value of sites is assessed on the basis of criteria related to cultural significance, money is also a critical consideration. The question always raised is whether a site, or the individual component of a site, is worth the money – in terms of an archaeologist's fees, machinery, costs of conservation, etc. Its worth, however, is valued in terms of its significance to the community, not the monetary value of the site if its components were to be sold on the open market. In order to deal with human or natural site impacts the government archaeologist is allocated funds for the management of the heritage. These funds are, in effect, a measure of the value that the community – as represented by the State, which distributes the funds – places on their heritage. Of course, there is never enough. Priorities are established solely on the cultural values of the site measured against its known status – located or not – and established or perceived threats. As sometimes occurs, the maritime archaeologist, who is also

a cultural heritage manager, is faced with the problem of allocating funds to sites of little archaeological value but of high interpretative, social and historical significance. Here is a situation where cultural heritage management principles can come into conflict with archaeological principles. This is not so much a clash of ethics but a jostle for primacy amongst two very similar philosophies.

The government archaeologist is not only beset from pressures from "below" but also from "above", which can test their ethics. Circumstances can arise where a government department overseeing a major infrastructure project can attempt to influence the cultural heritage agency to be less rigorous in enforcing measures to protect the cultural heritage than would otherwise be the norm. A community special interest group may also be able to exert some influence on the archaeologist's immediate superiors to allow certain activities to occur on, or to, a site that would otherwise never be allowed. In these situations, the archaeologist is asked to essentially compromise their professional ethics. Although the government archaeologist has, in most cases, a secure and stable income, this becomes the problem. They cannot simply walk away from such a dilemma – as can a consultant. The result is that the archaeologist either fights for their principle or acquiesces, and the cumulative effect of such incidents often results in job dissatisfaction and cynicism. Some archaeologists may rationalise a temporary lapse in applying rigorous archaeological principles as acceptable practice if it means that things will improve in the longer-term. The danger in this, of course, is that each subsequent time similar incidents arise it may become easier to compromise.

Another situation where a government archaeologist can find their principles tested is in the arena of the publication of surveys and excavation. This does not refer to the maritime archaeologist acting as the cultural heritage manager. Indeed Australian government maritime archaeologists are very well regarded in the interpretation of maritime heritage to the general public. However, success in this area of dissemination and sharing of knowledge has consequently resulted in fewer technical publications being produced on excavations and surveys that would be of interest to other archaeologists. Much of this stems from the fact that for a maritime archaeologist working in a cultural heritage agency, the measure of success is not counted by the number and quality of technical publications produced, but by the creation and implementation of programs and projects designed to inform the public about maritime heritage.

This not only applies to government employees, as consultant archaeologists in general are notorious for not publishing their findings. Although consultants' reports do find their way into the public domain through government, local and state libraries, these studies are very technical and concentrate on methodology, conduct and findings. Often little is done in the way of extra research and interpretation of the results, let alone presenting the information with the general public in mind. Consultants also rarely publish because they are not paid to do it, although there are some exceptions (see Atkinson, 1988; Wolfe, 1991; Bower, 1994). As with government

archaeologists, most consultants do not measure success through publication rates, they measure success through getting more contracts.

The above discussion has briefly examined how consultants and government archaeologists view sites based on relative cultural significance, which guides them to making decisions about how to manage these sites in terms of allocating time and money. It is a particular feature of Australian archaeology, and perhaps that of other "young nations", that the identification of ethnicity in the archaeological record that is not of the dominant Anglo-Celtic culture enhances the significance of a site. So much so that the yearning for the exotic – and old – sometimes borders on obsession. Many maritime archaeologists can testify to the truth of this observation with accounts of how they have had to investigate reports of supposedly Spanish, Portuguese, Chinese, Phoenician and Egyptian wrecks (see Boyd, 1995).

It is within this milieu that the Australian maritime archaeologist operates. However, not all countries share such attitudes and maritime archaeologists have, and will continue, to find themselves working in such countries in various capacities. Their ingrained training, principles and ethics will be tested by what they may be asked to do. This raises an important point; are archaeological principles and ethics shaped by the attitudes within a particular country as expressed by that country's law and cultural heritage management practices, or are they universal? Can archaeologists consider themselves to be principled and ethical if they partake in practices that would not be accepted in their own country?

There are maritime archaeologists who work with companies that are set up to commercially exploit shipwrecks. They sometimes apply archaeological techniques to the recovery of objects and data. They work, however, within a framework where primacy is given to the dollar over the data. In such a situation the more time spent on a site, the less the profit. The application of archaeological techniques in the recovery of objects and data is time-consuming and therefore affects the bottom line. Given the primary objective of these ventures, any conflicts that arise will always be resolved in favour of the profit motive and the quality of the archaeological investigation will therefore be compromised.

The issue of lost data is not only confined to the seabed. Recovered artefacts are often sold off at auction with the result that they are usually irretrievably dispersed into private collections. It is argued that once the objects are recorded they have no remaining archaeological value, especially those classes of artefacts considered as "repetitive" such as mass-produced ceramics. However, collections from excavations decades old are regularly re-examined in the light of new research questions arising from recent archaeological work and the availability of new analytical techniques, which glean more information from the objects.

Maritime archaeologists involved in commercial salvage of shipwrecks and consultant archaeologists engaged in rescue archaeology have some things in common. There are similarities in respect to time constraints and clients/employers who do not appreciate and/or care about the archaeological/cultural

values they are about to destroy, but this is where the similarity ends. For the consultant working on a rescue excavation it is in their interests to spend more time on the site – that is, to do more archaeological recording – as they are remunerated by the amount of work they do. This is in contrast with an enterprise that relies on the artefacts being sold where time is lost money, the contrast being made the more apparent if, as it is often the case, the archaeologist's remuneration is tied to a commission on the sale of the artefacts minus expenses.

Archaeologists who work with treasure hunters usually justify their actions on the basis that the archaeological value of these shipwrecks are continually being eroded by natural and cultural forces and that State funds are not forthcoming to preserve or excavate them (Mathewson, 1986:116-123). These arguments have some merit but they are based on the pessimistic view of making the best out of a bad situation. The danger of this argument is that it can become the *status quo* or acceptable standard rather than a temporary fix on the road to a better solution. In any event the standard of archaeology undertaken in this type of project is always compromised and the archaeologist does this out of choice, not compulsion. Other archaeologists have gone so far as to suggest that the combination of commercial salvage and archaeology is a good model for the management of underwater cultural heritage in poorer countries (Flecker, 2004).

Earlier in the chapter it was observed that the basic principles of archaeology and cultural heritage management, as practised in Australia, have had a near seamless convergence as is expressed in the AIMA *Code of Ethics*. The preceding paragraphs highlight the observation that the values that are placed on cultural heritage vary from country to country. Following on from this is the impact that differing attitudes to cultural heritage have on an archaeologist's principles and ethics. Do archaeological principles and ethics adapt to whatever cultural heritage regime is in place? If Australia's cultural heritage laws were changed in favour of the commercial salvage of shipwrecks, would the country's maritime archaeologists re-define basic archaeological principles to reflect the change in law? Would AIMA re-draft its *Code of Ethics* accordingly? I myself believe that the basic principles of archaeology are immutable with only the practice of archaeology being the variable. Therefore, should the laws in Australia change tomorrow, my principles and ethics will not change. Would I compromise them to continue earning an income as an archaeologist? I would not be interested in doing so. Furthermore my principles and ethics, which govern my conduct as an archaeologist, travel with me when I work overseas.

In a process that commenced in 1956, and which gained momentum only in the last decade, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) recognising the importance of the underwater cultural heritage as an integral part of the cultural heritage of humanity, set about establishing guidelines for the protection of this heritage. This culminated in the adoption of the UNESCO *Convention on the Protection of the Underwater Cultural Heritage* (CPUCH) in 2001 (see Chapter 10). The articles of the CPUCH are similar in sentiment and approach to the guidelines used in

Australian underwater cultural heritage management. This is to be expected as Australian maritime archaeologists were involved in the drafting of the document. The rules of the Annex to the CPUCH are pre-disposed to the preservation of fabric and knowledge and clearly prohibits the commercial salvage of shipwrecks. The role that archaeology has within the Convention is interlaced throughout the document.

The UNESCO *Convention on the Protection of the Underwater Cultural Heritage* is such a strong document that so clearly espouses basic archaeological principles and good cultural heritage management that AIMA is currently in the process of revising its *Code of Ethics* to incorporate the Convention. One may argue whether the UNESCO Convention can be used to claim that a set of values, or ethics, are truly universal. However, the body of the United Nations is the nearest thing we have today to a vehicle for expressing world opinion.

9.5. CONCLUSION

It is from the basic principles of archaeology that an archaeological code of ethics is derived. A code of ethics can be seen as a guide, a system, a set of regulations or laws, which governs the conduct of a profession. The "ethics" component gives this code a moral undertone signifying perhaps that the profession of archaeology is not just a job but a particular outlook on life. The purpose of such a code is to ensure that effective and principled archaeology is done. The quote at the head of this chapter – "which comes first – the data or the dollar?" – can be taken as an allegory for the difference between good archaeology (data) and bad archaeology (dollar). Money and competence (archaeological training and/or experience), influences how well archaeology is done. The effect of too little money on good archaeology is perhaps the first thing that comes to mind. Consider the consultant who charges expenses for the production of "high end" product but submits a report that barely meets minimum standards and pocketing the balance or conceals findings on the behest of the client. Consider also the government archaeologist who acquiesces to unethical practices for the sake of keeping his or her job or the maritime archaeologist seduced into participating in unethical activities by the promise of substantial remuneration. To practice good archaeology the data has to have primacy over the dollar.

Chapter 10

Historic Shipwrecks Legislation

Bill Jeffery

10.1. INTRODUCTION

This chapter will consider the background to Australia proclaiming the *Historic Shipwrecks Act 1976* (HSA), provide details about the provisions contained within this legislation as well as how they are implemented, and details about what is planned for the future. The Act, which only protects the remains of ships and its associated articles as "historic shipwrecks" and "historic relics", is considered to be at a crucial stage. It is nearly thirty years since the legislation was enacted and recent developments at the international and Australian Federal level in the field of cultural heritage management (submerged and terrestrial sites) make it necessary for the *Historic Shipwrecks Act* to be reviewed. These developments provide for a more holistic approach to the protection and management of all submerged cultural heritage sites and values as well as within a maritime historical context. This raises a number of issues, amongst which include the suitability of other Federal legislation to help facilitate this work, as well as the need for coordination of the various jurisdictions and their legislation to implement these tasks.

Legislation on its own will not protect cultural heritage sites and the Federal and State governments involved in administering the *Historic Shipwrecks Act* have been very active in implementing an historic shipwrecks/maritime heritage program throughout Australia. This chapter will therefore provide some background about this program and how it has operated to fulfill its objectives. It will also consider how it may be possible to develop

the program to encompass submerged cultural heritage sites and terrestrial maritime cultural heritage sites and values.

10.2. BACKGROUND

In non-Indigenous terms, Australia is made up of six States, the Northern Territory and seven external territories. The external territories are: Norfolk Island; the Territory of Heard and McDonald Islands; the Australian Antarctic Territory; the Territory of Cocos (Keeling) Islands; the Territory of Christmas Island; the Coral Sea Islands Territory; and the Territory of Ashmore and Cartier Islands. Prior to 1 January 1901 the States were colonies of Great Britain but after that date they united to form the Commonwealth of Australia with an Australian Constitution. The Australian Government (variously referred to as the Commonwealth, Federal or National Government) as well as the State and Territory governments each have their own jurisdictions. This means that in regard to protecting cultural heritage sites located underwater and on land, Federal as well as State or Territory legislation is required.

The first law specifically designed to protect shipwrecks in Australia was enacted in Western Australia. The *Museum Act Amendment Act 1964* was proclaimed on 18 December 1964 to protect four Dutch shipwrecks located off the Western Australian coast. This legislation was enacted because these shipwrecks were being placed under great pressure by treasure hunters, and there was community and political will to protect them. This legislation was amended in 1969, and again in 1973, at which time Federal legislation was proclaimed (*Seas and Submerged Lands Act 1973*) that disputed State jurisdiction in offshore waters.

The offshore jurisdictions of the Federal and State governments have been, and remain, a complex issue. The *Seas and Submerged Lands Act 1973* contains two Schedules incorporating the *Convention on the Territorial Sea and the Contiguous Zone* and the *Convention on the Continental Shelf*, which were agreed on by the United Nations on 29 April 1958. The Act declares Australian sovereignty in the territorial sea (twelve nautical miles), contiguous zone (a further twelve nautical miles out from the territorial sea) and the continental shelf (to a distance of 200 nautical miles from the territorial sea baseline). The low-water mark is the normal baseline for measuring the territorial sea but in some cases where the coastline is deeply indented a line drawn across some bays and joining some islands is used as the baseline. The Schedules, amongst other things, assist in defining the baselines and the nature of the territorial sea, contiguous zone and continental shelf.

The State governments had held the view for some time that they had sovereignty over three nautical miles of the territorial sea. In 1975 the six States contested the validity of the *Seas and Submerged Lands Act 1973* and the outcome on 17 December 1975 was in favour of the Federal government (*New South Wales v. The Commonwealth* [1975] 135 C.L.R. 337). This meant that from the low-water mark, or from the closing lines of bays or joining islands

(baselines), right around Australia the territorial sea, contiguous zone and continental shelf were deemed to lie under the jurisdiction of Federal government and not the State or Territory governments. In addition, the sea to the landward side of the baselines is referred to as internal waters and Australia has sovereignty in respect of these waters, with the exception of "waters within the limits of the States", which remain under the sovereignty of the States. The effect of the *Seas and Submerged Lands Act 1973,* and its test in the High Court, was that Federal legislation was required for the protection of cultural heritage sites in the territorial sea and internal waters.

Further successful court action by treasure hunter Alan Robinson in 1977 against the Western Australian government tested the validity of the United Kingdom's *Merchant Shipping Act* 1894 and the 1973 Western Australian legislation (*Maritime Archaeology Act* 1973*)* and their inconsistencies with Australia's *Seas and Submerged Lands Act* 1973 and the *Navigation Act* 1912. This resulted in the Australian Federal government proclaiming the *Historic Shipwrecks Act* 1976 to protect the Dutch shipwrecks and a number of other significant shipwrecks (Green and Henderson, 1977; Ryan, 1977).

10.3. *HISTORIC SHIPWRECKS ACT* 1976

On the day the *Historic Shipwrecks Act* 1976 received royal assent (15 December 1976) it only automatically applied to the Australian territories which included the Northern Territory and the seven external territories. To apply to the six Australian States, each State needed to request the Acts proclamation and this was done in Western Australia on 3 September 1977, Queensland on 18 November 1977, New South Wales on 11 April 1979, South Australia on 8 October 1980, Victoria on 11 March 1982 and Tasmania on 23 February 1982.

Negotiations between the Federal and State governments after the outcome of the Seas and Submerged Lands Case resulted in an offshore constitutional settlement in which jurisdiction and proprietary rights and title were "returned" to the States in the coastal waters – within the territorial sea and internal waters – adjacent to the States for a distance of three nautical miles (*Port MacDonnell Professional Fishermen's Association v. The State of South Australia* [1989] 168 C.L.R. 340). This came about through the proclamation of the *Coastal Waters (State Powers) Act* 1980 which gave extra-territorial powers to the States as provided by section 51 (xxxviii) of the Australian Constitution. However, Federal and State governments agreed to continue to apply the *Historic Shipwrecks Act* 1976 to protect historic shipwrecks in Australian territorial waters, coastal waters of a State, but not "waters within the limits of a State". An amendment proclaimed in 1980, however, would allow a State to request to cease its operation in that State if it so desired (Gurney, 1994).

A worthwhile description of one of the original purposes of the *Historic Shipwrecks Act* 1976 can be seen in the statement made by Senator Withers when he introduced the Bill in the Australian Federal Senate in 1976:

> A principal purpose of the Bill is to provide for the continuance on a sound legal basis of the existing high level of cooperation between Commonwealth agencies and such State institutions as the Western Australian Museum. The Bill therefore contains provisions that will allow agreements to be entered into between the Commonwealth and the States relating to implementation and enforcement of the legislation. These include provisions enabling the Minister to delegate his powers for these and other purposes. Such agreements would enable States to continue and expand their efforts to preserve Australia's maritime heritage under secure Federal legislation. At the same time, the Commonwealth will be able to act in the Federal interest, when this becomes necessary (Hansard 1976).

This statement is indicative of how the legislation has been administered over the last 28 years with the States playing a major role. The statement could also be seen as an indication that the Federal government wanted the States to increase their commitment and resources in this area. The Commonwealth Minister responsible for the legislation (currently the Minister for the Environment and Heritage) has delegated certain powers to State Delegates, who are generally bureaucrats in charge of the agency authorised to implement the Act in that State (Jeffery, 2002).

In its current form, the Act protects the "remains of ships" that are or have been situated in Australian territorial waters and internal (coastal) waters but not "waters within the limits of the State". This includes shipwrecks that were once located on the seabed, but have been removed and are now located on or under land. The definition of a ship is a "vessel that is used in navigation by water". The Act also protects relics that were associated with ships. The usual protection practice is to protect a shipwreck and all the relics associated with that shipwreck. Therefore any protected shipwreck and the associated relics, if they have been removed from Australian waters and are now on land, and located in a museum for example, are protected.

The major provisions of the *Historic Shipwrecks Act* 1976 are:

- the blanket protection of all shipwrecks older than 75 years (there is current debate on whether this applies to ships built, as well as wrecked at least 75 years ago) through an amendment to the Act made in 1985 (the date of the last amendments made to the Act);
- an obligation on the reporting of any discovered shipwrecks;
- protection of shipwrecks and associated relics younger than 75 years;
- protection of shipwrecks significant to Papua New Guinea;
- declaration of up to a 200 hectare protected zone surrounding an historic shipwreck;
- payment of a reward and award for the notification of a shipwreck later declared as "historic";
- the establishment of a Register of Historic Shipwrecks and Historic Relics;
- powers to keep a track of historic relics held by individuals;
- powers to issue permits for certain actions (that would otherwise be illegal under the Act);
- appointment of Inspectors other than State and Federal Police; and

- penalties for breaching certain provisions (the maximum fine is currently $50,000 or five years imprisonment, or both for a corporate body for interfering with an historic shipwreck).

Guidelines have been compiled and published that assist in the implementation of the Act, and they include a clear set of criteria for ascertaining the significance of a shipwreck site, in addition to site and artifact management, and establishing a shipwreck program (Henderson, 1994). In addition, the Federal government responded to a call for a National Historic Shipwrecks Research Plan (Jeffery, 1990a, 1993, 1994) and although its recommendations do provide the program with some useful directions, it is now in need of revision (Edmonds et al., 1995).

A review of the *Historic Shipwrecks Act* 1976 took place in 1990 (Kendall, 1990) although the last amendments to the Act were in 1985 – the timing of the blanket protection provision. When this provision was proclaimed to apply in the States in 1993, the number of protected shipwrecks went from 156 to about 5,000 (Henderson, 2001). The Act, however, was originally designed to protect a small number of sites, predominantly the four Dutch shipwrecks. This is highlighted by the provisions in the Act to keep a track of relics (artifacts) and for the agencies to issue permits so the artifacts can be sold or have their custody transferred. It is an achievable task to do this for four shipwrecks, maybe even 100; however, it is impossible to implement this work for 5,000 shipwrecks (and an ever-increasing number). The 1990 review also recommended some other amendments to the legislation, namely: the establishment of a Federal Historic Shipwrecks Advisory Committee; inclusion of the selection criteria in the legislation; and a significant increase in the funding yet they were not acted upon.

With regard to people committing offences under the *Historic Shipwrecks Act 1976* a limited number of minor infringements have been prosecuted, resulting in minor fines in addition to the seizure of some artefacts (Jeffery, 1999b:11-12). Two recent cases related to shipwrecks in Queensland have brought about harsher penalties, one being an overnight prison sentence and a fine for the diver penetration of the *Yongala* historic shipwreck in 2003. The other case arose as the result of the recovery of an anchor without a permit from the historic shipwreck *Marloo* in 2003. The offender pleaded guilty a day before the case was to be heard and received six months imprisonment (suspended for a period of 2 years), with a special condition that the anchor be returned to the site within six months. This later case highlights the need for the Australian government to properly maintain its registers. The government relied in part on the specifications of the vessel to prosecute its case and the National Historic Shipwrecks Database (NHSD) does provide for some of this information. Sufficient detail could not be found in the entry for the *Marloo,* however, and a reasonable amount of research on this aspect needed to be carried out by the Commonwealth Director of Public Prosecutions to proceed with the prosecution (Wagner, 2004).

10.4. STATES AND TERRITORIES SHIPWRECK LEGISLATION

The various States' historic shipwrecks legislation and programs are compatible with the Federal legislation. In some cases, such as South Australia, the (South Australian) *Historic Shipwrecks Act 1981* was drafted to mirror the *Historic Shipwrecks Act 1976,* although amendments to the Federal legislation were not mirrored by South Australia and no effective changes have been made to the State legislation since 1981. In Victoria initially the State legislation mirrored the Federal legislation, but this has since been incorporated into one Act, while in Tasmania, New South Wales and Queensland, the legislation to protect historic shipwrecks/maritime heritage sites is part of general heritage legislation, which have been amended a number of times. In some cases Indigenous heritage legislation is incorporated into this one Act, in other cases they are quite separate. There have been a number of infringements prosecuted under the various State Acts, primarily in regard to those pertaining to Protected Zones, and in some States on-the-spot fines are used to combat these infringements.

In Western Australia, Victoria and New South Wales, advisory or consultative committees have been established to assist in implementing historic shipwreck programs, and this may be part of the reason for these States having the most effective programs in the country. Although the legislative situation in Western Australia was briefly outlined earlier it is worth highlighting a recent initiative. In 2002, the *Heritage of Western Australia Act 1990* was used to protect the remains of 15 submerged World War II aircraft located off Broome (McCarthy, 2004c), something which was not possible under most State or Federal maritime archaeology or historic shipwrecks legislation due to the nature of the remains.

10.5. THE HISTORIC SHIPWRECKS PROGRAM

The manner in which the Historic Shipwrecks Program operates in Australia is that the Federal government agency, through the Department for Environment and Heritage, delegates much of the day-to-day management to State government agencies. A number of objectives, strategies and activities have been developed to help guide the program (Green, 1995; Jeffery and Moran, 2001). The Federal government provides funding to each State to implement activities on historic shipwrecks located in Australian territorial waters and this money is often used to employ maritime archaeologists on a short-term or long-term, temporary basis. In addition to Federal and State Police who are empowered to enforce legislation, a number of State government compliance officers based in various centres around the country have been authorized and trained as Inspectors under the Federal and State legislation. Given the long Australian coastline, this arrangement greatly assists in monitoring infringements as well as assisting in the public relations work of the program.

The extent of historic shipwreck funding for the program has often fluctuated and would seem inadequate for a Federal initiative. The annual funding for the Historic Shipwrecks Program in 2003/2004 around Australia was $390,000 compared to $330,000 in 2000/2001 and $460,000 in 1999/2000. These funds are shared between the six States, the Northern Territory, Norfolk Island and any other external territories to implement many of the functions required under the Commonwealth *Historic Shipwrecks Act 1976*. The Australasian Institute for Maritime Archaeology also receives some funding to assist with research publications, conferences, and other activities associated with the program.

To put this in context, this annual budget is a paltry sum when compared to the funds that the Federal government and all the States put into their general heritage programs. There is also a vast discrepancy between the level of Commonwealth funding and the number of Commonwealth shipwrecks, compared to what the States fund and the number of shipwrecks covered by State legislation. For instance the Commonwealth grant to South Australia during 2000/2001 was c. $53,000 and there are approximately 350 shipwrecks located in Australian territorial waters adjacent to South Australia. The State agency funded a maritime heritage program at a cost of c. $160,000 (in addition to supplying capital equipment) and there are about 450 shipwrecks located in waters within the limits of this State. In New South Wales the comparison is $56,700 funding from the Commonwealth for 1,465 (86%) shipwrecks lying in Australian territorial waters, and $217,000 funding from the State government for 247 shipwrecks within the limits of the State (Jeffery and Moran, 2001:126).

The interest in the historic shipwrecks program from the general community and visitors to Australia is increasing. The number of visitors to shipwreck sites and maritime museums throughout the country is in excess of one million annually and the economic gain from this is substantial. On one shipwreck site in Queensland, the *Yongala*, dive charter operators are taking over 10,000 divers annually to the site and making in excess of $2 million and the associated businesses are reaping the financial benefits from the visitors to the region. The diving tourism industries around Australia are growing rapidly. In the 1980s it was estimated that there were 45,000 licensed scuba divers in Victoria alone. There were over one million registered dives on the Great Barrier Reef in Queensland in 1999. In New South Wales it is estimated that there are 70,000 trained scuba divers, and over 130 dive shops and clubs (Jeffery and Moran, 2001:127).

Some of the State programs include *in situ* interpretive facilities for these divers and other visitors, but interpretation of shipwreck sites and maritime heritage in general is also found within the many maritime museums located around the country. Eleven of Victoria's Maritime Museums and historic ships attract 244,000 visitors annually. The Western Australian Maritime Museum receives 200,000 visitors annually and its web site has 17,000 visitors per month. New South Wales's major maritime-related museums have over 650,000 visitors annually. Many of the main attractions at these museums are shipwrecks

because of the fascination they hold for the general public (Jeffery and Moran, 2001:127).

Another resource that has been instrumental in helping Australia to achieve a viable public program is the academic field. In 1980, Curtin University in association with the Western Australian Maritime Museum commenced the first academic program in maritime archaeology and a number of the current practitioners employed in the Australian States are graduates from this course. Currently, three Universities are conducting undergraduate and graduate programs in maritime archaeology: James Cook University in Queensland; Flinders University in South Australia; and the University of Western Australia.

10.6. OTHER RELEVANT FEDERAL LEGISLATION

There are other Federal Acts that can play a role in the management of historic shipwrecks, submerged cultural heritage sites and terrestrial maritime heritage sites. One of the latest additions to this list is the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), which among other things, provides for the "protection and conservation of heritage". Although shipwrecks and underwater cultural heritage sites are not specifically mentioned they are covered under the general term "historic heritage" and "heritage values of places". Recent amendments to the EPBC Act (2003) make provision for a National Heritage List of places that are of outstanding heritage value to Australia and meet the National Heritage criteria as assessed by the Australian Heritage Council. At the time of writing only three sites have been placed on this National list, and no shipwrecks or underwater sites have yet been nominated for inclusion.

The EPBC Act requires that any proposed action having an impact on the heritage values of a National Heritage place be referred to the Minister for Environment and Heritage for assessment and approval. "Under the Act, management plans for Federal and Commonwealth listed places owned by the Australian Government must be prepared and Australian Government agencies must not contravene such a plan." The Act also provides for a Commonwealth (Australian Government) Heritage List – places that are owned or leased by the Commonwealth and meet the criteria determined by the Australian Heritage Council. The Commonwealth Heritage List of significant heritage places was completed in 2004 and includes only one shipwreck, the SS *John Penn*, in New South Wales. Although the Federal government is able to claim ownership of all "unclaimed wreck" under the *Navigation Act* 1912 it is clear that the existing *Historic Shipwrecks Act* is currently regarded as the singular means for legislative protection. It is a possibility, however, that the Australian government may, in its review of the Historic Shipwrecks Act 1976, decide to use the EPBC Act as its main legal device to protect historic shipwrecks, as it has done with terrestrial heritage sites. If so, it would change dramatically the methods and the number of shipwrecks managed. It could also be seen by some

as taking some positive steps to adjusting Australia's underwater cultural heritage legislation in line with the UNESCO *Convention on the Protection of the Underwater Cultural Heritage* which is discussed below.

The Australian Heritage Council was established in February, 2004 through the *Australian Heritage Council Act* 2003. Amongst its activities, some of which are stated above, the Australian Heritage Council is responsible for maintaining the Register of the National Estate, about 13,000 places of natural, historic and Indigenous significance and which was established in 1976 pursuant to the *Australian Heritage Commission Act 1975* (now repealed). A small number of shipwrecks have been placed on this register. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* also protects and manages Indigenous heritage sites including submerged sites. The *Australian National Maritime Museum Act 1990* has provisions that may relate to artefacts from historic shipwrecks including: the purchase, lending or hiring of maritime historical material, the recovery of maritime historical material from the Australian marine environment, and the disposal of maritime historical material from collections (see Chapter 12). Finally, under the *Protection of Movable Cultural Heritage Act 1986,* protected objects (which includes shipwreck material as "Class B" objects) cannot be exported from Australia unless in accordance with a permit or certificate.

The original Act for dealing with the remains of shipwrecks was the *Navigation Act 1912* in which the "receiver of wrecks" dealt with questions of salvage and possession of objects from wrecks. With the promulgation of the *Historic Shipwrecks Act* in 1976 the provisions of the *Navigation Act* relating to older shipwrecks now considered "historic" became redundant. The *Navigation Act*, however, may still apply to any shipwreck sites in very specific circumstances such as saving human life, securing the safe navigation of ships, or dealing with an emergency involving a serious threat to the environment - in which cases historic shipwrecks can be removed and/or sold.

10.7. INTERNATIONAL CONVENTIONS

The UNESCO *Convention on the Protection of the Underwater Cultural Heritage* was developed primarily as a means of protecting sites in countries or locations that were not adequately protected by existing legislation or management practices. Although a number of major projects around the world had demonstrated the archaeological value of submerged cultural heritage sites, some significant shipwrecks continued to be exploited solely for their monetary value (e.g., Mathewson, 1986; Sheaf and Kilburn, 1986). The finding of the *Titanic* in international waters in 1985 (Ballard, 1987) was also a turning point in looking at how shipwrecks should be managed, as it highlighted the competing "ownerships" and the conflicts in managing sites, as well as bringing within reach the techniques to search for these deeper sites.

Currently, the most applicable UNESCO Convention is the World Heritage Convention but UNESCO has stated in its World Heritage Newsletter

(No. 3, December 1997) "It will be recalled that the underwater heritage is not covered by the World Heritage Convention". Cleere (1993:25) stated that shipwrecks are not specifically excluded by the terms of the convention itself, however, the *Operational Guidelines for the Implementation of the World Heritage Convention* lay down (paragraph 26) that "Nominations of immovovable property which are likely to become movable will not be considered". While an area surrounding Robben Island in South Africa encompassing about 20 shipwrecks is on the World Heritage List, for example, the values of those shipwrecks was not one of the justifications for that listing. It is a similar situation with the World Heritage listed Great Barrier Reef, off the eastern coast of Australia, although this area does contain numerous shipwrecks and other types of underwater cultural heritage sites that are seen by many as a significant part of the area's values (MICDA, 2004). Some Australian maritime archaeologists are looking into the issue of how, and why, shipwrecks and other underwater cultural heritage sites may be placed on the World Heritage List (Jeffery, 2004; McCarthy, 2004a).

In November 2001, at the 31st General Conference of UNESCO in Paris, the *Convention on the Protection of the Underwater Cultural Heritage* (CPUCH) was adopted by 87 affirmative votes, thus becoming UNESCOs fourth heritage convention (O'Keefe, 2002). The Convention has seen a number of changes since its inception, however, the *in situ* preservation of all traces of human existence (not just shipwrecks) that have been underwater for 100 years and are of cultural, historical or archaeological character, and their exemption in any commercial exploitation, remain as its fundamental objectives (O'Keefe, 2002). Among some of the major provisions of the CPUCH are its application to all internal and external waterways of States (member countries), recognition of the wide variety of underwater cultural heritage, and opposition to the commercial exploitation or salvage of sites (see Forrest, 2002a, 2002b, 2003).

Once ratified, the CPUCH will apply to a country's sites, sites in international waters, as well as its citizens who wish to work on sites anywhere in the world. It is a possibility, however, that a country's nationals will acquire material from within another country that has not ratified the Convention, and ship the material to another non-signatory country to enable the sale of this material. The Convention will not come into force until three months after its formal ratification by 20 countries, and currently only three countries – Panama, Bulgaria and Croatia have done this. For Australia to sign the Convention, it must firstly agree to the content, have it assessed by JSCOT (Joint Standing Committee on Treaties), and be tabled in Parliament. The Australian government has well-established procedures on conventions including the steps it needs to take when entering into a convention agreement. (Jeffery, 2002:75). The Australian government's official position is that "Before a treaty is ratified a full review of the laws of Australia which may conflict with a treaty needs to be undertaken. All necessary legislative amendments, at a State and Commonwealth level, should also be made before Australia enters into a treaty, that is, the Government's official policy should be followed".

Australia has at least 8 Federal and 17 State or Territory Acts that apply to sites and objects covered by the UNESCO Convention and just about the same number of Federal, State and Territory programs which encompass their own strategies, goals, objectives and activities. The *Historic Shipwrecks Act 1976* and the State Acts have some potential conflict with some of the provisions in the convention, eg., between the no commercial exploitation rule contained in the convention, and the "reward" and allowable sale with a permit provision in the Australian Federal and some State Acts.

The UNESCO Convention states that although States (such as Australia) have exclusive rights to regulate activities directed at underwater cultural heritage in its internal waters, territorial sea, and "may" regulate and authorize activities in its contiguous zone, the Rules contained in the Convention will apply to *all waters*, once they accept or ratify the Convention. Some countries have already informally adopted these rules to apply in their management of historic shipwrecks/submerged cultural heritage resources.

10.8. SUMMARY AND FUTURE DIRECTIONS

Australian law was enacted in 1976 to protect historic shipwrecks, primarily the Dutch VOC sites. This was initiated because of the threat from treasure salvors and because Western Australian State legislation was declared invalid to apply to those waters. Nearly 30 years later, the essentially unchanged legislation is still being used and applied to approximately 5,000 shipwrecks, and in some cases similar out-of-date State legislation is being administered. The programs that accompany this legislation are very active, albeit under-resourced, but their successes tend to hide the deficiencies of the legislation. Legislation without an active accompanying program is not at all effective in protecting sites. A program needs to implement activities that can demonstrate to the community the value of historic shipwrecks and the need to protect them, as well as involving the community in all aspects of the program, and the current maritime heritage/historic shipwrecks program does this to some extent. Notwithstanding limited funding, it is a productive and leading program when compared to other Australian/State government programs in heritage management.

General heritage legislation at a Federal and State level around the country is constantly being upgraded. Some of this includes maritime archaeology/maritime heritage/submerged cultural heritage sites, but some of it does not. To a large extent the focus is still with a piece of legislation, the *Historic Shipwrecks Act,* which protects the remains of ships that are situated in (or have been removed from) Australian territorial waters. It does not protect significant intact and operating vessels, or any other type of site related to the maritime history of Australia. This places a somewhat antiquarian approach to shipwreck sites, focussing on the material remains, potentially isolating them from their context, and the past and contemporary communities.

In only a few cases, such as the *Xantho* project (McCarthy, 2000) have shipwrecks and shipwreck material been used to explore and reveal their social values to Australians (also see Staniforth, 2003; Stanbury, 2003). This is a very important, yet almost forgotten aspect that needs to be addressed. Although the legislation, like archaeology more generally, focusses on material remains, it needs to keep in mind that we are protecting and pursuing this activity for the benefit of the community. The intent is to inform them about past and present human behaviour, which should incorporate the range of factors that have contributed and not just be limited to that found on shipwrecks.

The Federal government in this endeavour is currently contemplating a National Maritime Heritage Strategy that will incorporate a review of the legislation in context with a program that considers Australia's maritime history and the associated sites. It is also being considered in context with the UNESCO *Convention on the Protection of the Underwater Cultural Heritage*, which has a slightly different focus, given its key requirement that sites must be located underwater. Many important maritime sites that could contribute to a maritime heritage program (such as light stations and intact vessels) are not found underwater. Although it might be possible to formulate one government program for such a wide remit, it would seem unnecessary to bring all these activities and sites under the one piece of legislation.

It would seem desirable that a review of the *Historic Shipwrecks Act* and the associated program encompassing these different foci should result in a cooperative effort involving a number of agencies and groups responsible for different pieces of legislation and involving people with different responsibilities, skills and experiences. In summary, one clearly defined program is needed involving a number of pieces of legislation and the various agencies/institutions/personnel with the appropriate skills required to implement it. This approach is not new, it is used in a number of cases, such as in planning and assessing developments, where one leading piece of legislation triggers and coordinates the input of other Acts and the accompanying resources. Changes to the legislation and the Historic Shipwrecks Program should aim to achieve the following:

- Formulate objectives, strategies and activities for a program based around the need to "manage" maritime archaeology/maritime heritage/submerged cultural heritage sites and values;
- Redefine the aim, and review the *Historic Shipwrecks Act 1976* in the light of the objectives of the new program and the other Acts/Programs to be involved;
- Formalize in the legislation an adequate fund to implement the program;
- Provide for Community/Expert advise through formalizing an Advisory Committee in the legislation;
- Establish and formalize a network with other agencies/institutions/personnel to assist in implementing the program;
- Incorporate criteria for protecting sites in the legislation;
- Incorporate Rules similar to those contained in the UNESCO Convention in the "new" legislation; and

- Develop and fund adequate training programs required to implement the program.

These factors would revitalize the interest in, and effectiveness of managing these types of cultural heritage sites as it would provide the program with a holistic approach and appeal to more of the Australian community. It would also provide a way for the required resources to be shared. This is what Senator Withers had in mind when he spoke in the Australian Parliament in 1976, and although there has been an injection of resources into the program from the States and Federal governments, more is needed, and with a more diverse, less bureaucratic approach.

Chapter 11

Innovative Approaches in Underwater Cultural Heritage Management

Ross Anderson, Cassandra Philippou and Peter Harvey

> *As a resource, material culture plays a role in the environment by providing cultural continuity and perspective and hence linking the past present and future within the experience of any given human generatio.* (Lipe, 1984:2).

11.1. DEVELOPMENT OF CULTURAL RESOURCE MANAGEMENT

As a public aspect of various professions associated with history, pre-history and the environment, heritage management began its worldwide development in the 1960s and 1970s following the introduction of sites and relics protection legislation. This legislative trend can be linked to several international charters for the protection of cultural heritage developed and adopted by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) after World War II. This was also closely associated with increasing community interest in environmental conservation, such as the Green Bans in Australia's eastern states in the early 1970s (Davidson, 1991b).

Henry Cleere, commenting upon the development of archaeological heritage management, states that "in most countries the importance of archaeological conservation as an historic dimension of the heritage was largely overlooked" until the middle of the twentieth century (Cleere, 1989:4). World War II had a devastating effect upon many cultural heritage monuments in

Europe and Asia, and the post-war boom in development bore witness to the destruction of many more places of heritage value (Davidson, 1991a:1). The wanton destruction of cultural heritage during the war provided incentive for UNESCO to present the plight of cultural heritage to the world; the result was the *Convention for the Protection of Cultural Property in the Event of Armed Conflict*, adopted in 1954. This convention was followed by several other international agreements through UNESCO including: the *International Charter for the Conservation and Restoration of Monuments and Sites* (1964); the *Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property* (1970); and the *Convention Concerning the Protection of the World Cultural and Natural Heritage* (1972).

These conventions were all aimed at providing accepted minimum standards for the protection of cultural heritage, and during the late 1970s and 1980s various similar charters and legislation were developed in Australia. Nevertheless it can be argued that the most profound international developments relating specifically to archaeology have occurred more recently. The 1990s and early 2000s witnessed the creation of several international agreements relating to both terrestrial and submerged archaeological sites. The International Council on Monuments and Sites (ICOMOS) created the *Charter for the Protection and Management of the Archaeological Heritage* in 1990, and followed this in 1996 with the *Charter for the Protection and Management of Underwater Cultural Heritage*. UNESCO has used this last charter as the basis for the 2001 *Convention for the Protection of the Underwater Cultural Heritage* (see Chapter 10).

"Heritage" is an evolving concept, and what is not considered to be heritage today, may become heritage tomorrow. The concept of heritage assumes that all people and all cultures will have places and items that can be considered significant and it assumes that heritage significance can be assessed through many avenues. As Lowenthal remarks, heritage can also be "something we are stuck with" and may not be something that we want to inherit (1989:215). In order to determine what forms of heritage can be classed as "cultural resources" (a term that is not generally used in Australia as it tends to exclude intangible heritage, and the heritage that belongs to the Indigenous communities), a set of values must be assigned to the place or object. As Lipe observes, value is not inherent in a place or object but is dependent upon "cultural, intellectual, historical and psychological (social) frames of reference" held by people or groups connected to the place or object (Lipe, 1984:2).

11.2. MARITIME CULTURAL HERITAGE MANAGEMENT

Since the term "culture resource management" was initially coined in the United States of America in 1974, the profession has undergone dramatic evolution both abroad and in Australia. As Biornstaad (1989:72) remarks, one of the most important goals of heritage management in terms of the archaeological

heritage is that the resources are retained in their environment and their relationship to history and contemporary society are maintained. Numerous authors have contributed outlines of the heritage management process at an international level (e.g., Lipe, 1944; Fowler, 1982; Cleere, 1984, 1989; McManamon and Hatton, 2000).

Historically, the birth of cultural heritage management as a discipline both in Australia and abroad was a consequence of heritage protection legislation. The legislative implementation and enforcement process was supplemented by the need to understand the resource, hence inventory was undertaken, albeit often in an *ad hoc* form. McManamon and Hatton provide a very broad definition of cultural heritage management, stating that it includes policy making at all levels of government, and the "day to day managing of organisations and cultural resources" (2000:2). Wildesen (1980 cited in Fowler, 1982) expands on this concept in his definition, outlining the management skills that are applied in the context of heritage management: planning, organising, directing, controlling and evaluating (Fowler, 1982:1). Biornstaad includes the following functions as essential for the effective management of archaeological resources: "survey, inventorisation, excavation, research, protection, preservation, education" (1989:72).

Archaeologists often view cultural heritage management as the practice of archaeology in the public arena, usually by heritage management agencies (Smith, 1996). Heritage management today is firmly placed under government control by legislation enacted for the specific purpose of providing protection (in varying degrees) to places and objects of heritage significance. As Smith (1996) points out, heritage management, particularly archaeological heritage management, is the political front for the discipline – the interface where archaeology meets the public. It is important that the public have involvement and interaction with heritage management in order that cultural resources do not become lost in the mechanisms of government, resulting in the public loosing their ability to benefit from them. It is also imperative that management agencies realize the power that can be wielded through education and interpretation of cultural resources. Heritage managers have the capacity to use archaeological sites to educate the public in a proactive way. The aim should be for public awareness of cultural sites to become more akin to the public's understanding of the need to protect the natural environment.

The concept of public ownership is a basic principle relating to cultural heritage generally, and Muckelroy (1980:186) notes its importance for sites on the seabed. He comments that the public (divers in particular) should be encouraged to become involved in the protection and investigation of underwater sites, partly in order to maintain a public interest in them. This enables maritime archaeologists to generate and nurture the political will to assure preservation of these sites for the future (Muckelroy, 1980:186). As will be outlined below, discoveries by Australia's diving public encouraged legislators to develop protective measures, and support at the public level was the impetus for maritime heritage programs around the country.

Heritage protection developments on the international scene had repercussions in Australia, and maritime archaeology was at the forefront of introducing heritage protection and management regimes in this country. In Australia, management of maritime heritage includes all of these concepts, although each State and Territory works within their own policy and strategies to fulfil their government's objectives. Hence, managing agencies have been slowly moving beyond their legislative origins to develop policy documents, strategies and guidelines that enhance the protective measures enforceable by the legislation.

11.3. MARITIME HERITAGE PROGRAMS

In the decade following the enactment of the *Historic Shipwrecks Act* 1976, each of the Australian States and Territories assented to the application of this Act in waters adjacent to their respective coastlines. Most did this by the early 1980s, with community support and lobbying by volunteer organisations, and some States concurrently enacted legislation to protect shipwrecks in State waters, such as the Victorian and South Australian *Historic Shipwrecks Acts* of 1981. New South Wales protected both terrestrial and submerged archaeological sites under the *Heritage Act* 1977, however a maritime archaeology program was not implemented there until 1988 (Nutley, 1998:115). Currently, each State and Territory has a delegated authority under the Act and at least one maritime archaeologist is employed in each State and Territory to manage sites in Federal and State waters. The strengths of these agencies vary, with some states having well developed and funded maritime heritage programs (Western Australia, Victoria and New South Wales), while others continue to struggle to engender sufficient political will to keep their programs alive.

The Federal agency responsible for the administration of the *Historic Shipwrecks Act* is the Department of Environment and Heritage, based in the national capital of Canberra. The Identification and Conservation Branch of the Department undertakes management and desktop-based administration of the Historic Shipwrecks Program. This is done by the devolution of responsibility whereby the powers of the Federal Minister for the Environment and Heritage in relation to certain parts of the *Historic Shipwrecks Act* are delegated to a State or Territory delegate. This partial delegation of Ministerial power and responsibility translates into the "hands-on" management of shipwrecks in Federal waters (over 75% of Australia's shipwrecks) being undertaken by State and heritage management agencies, with funding contributed by the Federal government under the auspices of the National Historic Shipwrecks Program.

Although there has been a traditional distinction made between the activities of the museum-based agencies (Northern Territory, Queensland, Western Australia) and government heritage agencies (New South Wales, South Australia, Tasmania, Victoria) in reality the museum agencies undertake similar cultural heritage management activities. The Museum on the Territory of Norfolk Island is somewhat unique as its area of responsibility is confined to

dealing mainly with artefacts from HMS *Sirius*. Additionally, the Australian National Maritime Museum receives funding from the Federal government and employs staff involved in maritime archaeology and maritime archaeological conservation, but is not responsible for administration of the legislation (see Chapter 10).

State and Territory governments provide funding and resources for their own maritime heritage programs, and have additional state legislation for historic, maritime and Indigenous archaeological sites – some of the agencies have management responsibility for some or all of these Acts. Due to differences in state legislation, staff numbers, site types, marine environments, research foci, population pressures and political, economic or administrative environments (affecting budget resources), Australia's State or Territory practitioners have approached maritime heritage management in different (though not always dissimilar) and sometimes innovative ways.

11.4. STRATEGIC APPROACHES

The Commonwealth Department of Environment and Heritage (DEH) remains the agency responsible for overall policy direction, legislation and funding for Federal shipwrecks under the Act. DEH holds regular meetings with the delegates and a cooperative management regime has had the effect of a generally cohesive national direction for Australian historic shipwreck management over the last twenty years (Nutley, 1998:116). The advisory and information dissemination role of the Australasian Institute for Maritime Archaeology is also important to the development of Australian maritime archaeology and most maritime heritage managers and practitioners are members of AIMA, although it is not a professional body. AIMA has consistently promoted professional management of Australia's historic shipwrecks (and underwater cultural heritage more generally) and advises the Federal government on matters relating to underwater cultural heritage management. DEH has in turn supported AIMA with annual funding for conferences, programs and publications. State or Territory agencies have also supported AIMA with resources for publications and conferences. Overall this approach has had the effect of promoting a national strategic approach to underwater cultural heritage management in Australia.

In the mid-1990s the Federal government and AIMA published *Guidelines for Managing Australia's Historic Shipwrecks* (Henderson, 1994) and the *National Historic Shipwrecks Research Plan* (Edmonds et al., 1995) was completed. The *Guidelines* document provided a formula for most aspects of shipwreck management including historical research, regional surveys, databases, excavation, conservation, interpretation, public access and involvement of volunteers. As part of the National Historic Shipwrecks Program the *Research Plan* looked at developing maritime archaeological research priorities for the various management agencies, and provided a basis for communicating the results to the public.

Other projects such as the development of the National Historic Shipwreck Database (NHSD) are important outcomes of the long-term collaboration between AIMA, State or Territory agencies and the Federal government with demonstrable management and public access outcomes. As well as fulfilling the statutory requirement for the Federal government to maintain a national register of historic shipwrecks the NHSD is now available as a publicly accessible research tool on the World Wide Web.

At a state level, a number of agencies have developed planning documents outlining policies and strategic directions. The New South Wales Heritage Office produced *Underwater Heritage Principles and Guidelines* in 1994 and has been developing strategic plans, usually on a triennial basis, since 1989. Heritage Victoria has also published a five-year plan to guide maritime heritage management by the agency, based on the themes of "Knowing, Communicating, Managing, Protecting" (Strachan, 2000b). The Federal Government in partnership with the State and Territory agencies is currently seeking to adopt a National Maritime Heritage Strategy, which is more inclusive of non-shipwreck maritime heritage. Although concerns have been expressed about the increased scope of the program, the workload and a decrease in Federal funding (Jeffery and Moran, 2001), in practice the agencies have already been documenting a wide range of maritime heritage sites, both submerged and terrestrial (McCarthy, 2003).

11.5. INNOVATIVE APPROACHES

Understanding the cultural heritage resource is the most basic of the activities carried out by management agencies. This knowledge is essential to create and maintain an inventory (or register), assess site significance, understand site environments and site formation processes, protect sites, interpret sites and identify gaps and areas for future research. These activities include database management, artefact management, historical research, regional and thematic surveys, site surveys, wreck inspection programs, excavation and site monitoring programs. At a basic level most agencies have wreck inspection programs or regional survey programs to assess and monitor sites that may be spread over hundreds or thousands of kilometres, and to respond to wreck reports from the public.

Regional surveys have been conducted for much of the "Australian archipelago"– Australia's mainland coastline and some of its 8,000 plus islands – and some of its major navigable inland estuarine and river systems such as the Swan River, Murray River and Darling River. The Northern Territory, Western Australia and Queensland have vast land and sea territories, including two of the world's largest reef formations (Ningaloo Reef and the Great Barrier Reef). Tasmania's area of responsibility includes a number of island groups and sub-Antarctic Macquarie Island lying halfway to Antarctica. Strategies to cover these areas have relied on collaboration with individuals, local communities, and organisations such as the Royal Australian Navy, Hydrographic Office, Royal

Australian Air Force, Australian Customs Service, Australian Antarctic Division, National Parks agencies, oil drilling companies, survey companies and the Great Barrier Reef Marine Park Authority.

Thematic surveys allow historians and archaeologists to choose important historical research themes, and select sites worthy of further investigation (Staniforth, 1991:22). The first Australian thematic regional shipwreck study was undertaken for Victoria's Port Phillip Bay by Dr Leonie Foster (1987-1990), and since then thematic studies have been undertaken to cover most of the Victorian coastline (Foster, 1996; Jordan, 1995; Anderson and Cahir, 2003). Thematic research is conducted in order to both provide a framework for regional studies, and to gauge the resource potential for specific comparative industry or site types (see Chapter 4). State-based studies have included the Dutch VOC shipwrecks (Western Australia), Macassan sites (Northern Territory), inland river trade and infrastructure (South Australia, Victoria, New South Wales), convict shipbuilding (Tasmania) and indentured labour trade shipwrecks (Queensland). More national approaches to thematic research have also been carried out on topics such as iron and steam shipwrecks, Australian shipbuilding, whaling and sealing, port infrastructure, submarines, and submerged aircraft.

Test and research excavations have been conducted in Tasmania (*Sydney Cove*, *Litherland*), Western Australia (Dutch wrecks, *Rapid, Eglinton*, *James Matthews,* Broome aircraft), Victoria (*William Salthouse*, *Clarence*, *Mountain Maid*, *Thistle*, SS *City of Launceston*), South Australia (*Tigress*, *Solway*, *Water Witch*, Mannum Dry Dock), and Queensland (HMS *Pandora*). During the 1990s the New South Wales Heritage Office conducted a number of water probe surveys in collaboration with the Manly Hydraulics Laboratory to locate and delineate sites buried in New South Wales' shallow river-mouth bars and intertidal beach zones (Smith, 1995b).

Heritage Victoria is so far the only agency in Australia to have granted a permit to a consultant for undertaking an underwater shipwreck excavation (Coroneos, 2003). Although a tentative step compared to the typical situation in terrestrial archaeology, it perhaps illustrates the future for maritime archaeological research and management in Australia. As development pressures increase along the urbanised coastal fringe, it is anticipated that the issuing of such permits will become more common.

State agencies have supported international as well as national collaborative projects. The Western Australian Maritime Museum (WAMM) has sponsored and participated in work in Asia, the Atlantic, Pacific and Mediterranean. The HMS *Bounty* project at Pitcairn Island involved the participation of the Queensland Museum and the Tasmanian Parks and Wildlife Service (Erskine, 1999), and the Australian World War I submarine *AEII* project in the Sea of Marmara, Turkey was supported by participation of NSW Heritage Office staff (Smith, 2000). Fieldwork in Oman and the Sri Lankan maritime archaeological project in Galle Harbour has been undertaken by WAMM with participation from other agencies (Green et. al., 1998). The NSW Heritage Office and the Western Australian Maritime Museum have supported direct

involvement of their staff in UNESCO-related work, along with contributions from practitioners all over Australia. South Australia has cemented ties with Finland following the touring of an exhibition relating to the Finnish wreck *Fides*, including official renaming of a geographic feature on Kangaroo Island to reflect the impact of this event.

In 1996 a Centre of Excellence in Maritime Archaeology was established at the Western Australian Maritime Museum. The Centre was an attempt to integrate national research objectives within a state-based organisation. By having a Centre for maritime archaeological research and technological development it was envisaged that high technology equipment and expertise could be exported domestically and internationally. At the present time the Centre is not being funded, although work was carried out in Australia and abroad which assisted in refining equipment and techniques using sonar positioning and photogrammetric recording methods (Green and Souter, 1999, 2002; Green, 2002; Green and Gainsford, 2004).

Based on the understanding of the maritime cultural heritage comes the protection of the resource through activities such as legislation and legal protection of sites, the enforcement of compliance with legislation, physical site stabilisation, conservation management planning and site and artefact conservation. Lawyers, diplomats, enforcement officers, conservators, police, maritime archaeologists, engineers, marine biologists, chemists and academics have been involved in protecting Australia's maritime heritage.

Prior to 1993 sites were nominated for historic shipwreck declaration on a case-by-case basis. The work involved in preparation of a case for declaration and the resultant decision-making process was a time and resource-consuming process. Other mechanisms for protection such as "Provisional Declaration" (interim protection for a period of five years to allow further research to be carried out) and "Area Declaration" (geographically and thematically related shipwrecks to be declared historic e.g., Strachan, 1988) were also used to protect sites. With the advent of "Blanket Declaration" in 1993 (all shipwrecks over 75 years old are automatically historic) Case, Provisional and Area Declarations are now uncommon as most Commonwealth shipwrecks in Australia are now protected, though Special Declaration (a shipwreck less than 75 years old to be gazetted as historic) is still used. Blanket declaration first enacted by the Federal Government is now mirrored in most State and Territory legislation (see Chapter 10). As well as being administratively more convenient, the blanket approach is beneficial in reducing confusion among the diving community and promoting wreck conservation, as the general rule is "look but don't touch".

Artefacts associated with shipwrecks are an important aspect of cultural resource management activities in Australia. Following the 1993 blanket declaration for all shipwrecks over 75 years old a corresponding shipwreck artefact Amnesty was held, and members of the public (custodians) who held artefacts from any historic shipwreck were required to report them. Custodians who wish to transfer historic shipwreck artefacts require permits for sale and custodians, as well as agencies, are responsible for artefacts' conservation requirements as part of their duty of care. Recent work in Victoria has assessed

the significance of Amnesty collections and their conservation requirements (Howell Meurs, 1998; Dickens and Acton, 2000; Philippou, 2004). Agency work has resulted in long-term and ongoing engagement with public and private custodians of Amnesty shipwreck material. In addition historic shipwreck artefacts are afforded further protection under the Commonwealth *Protection of Moveable Cultural Heritage Act* 1986 which forbids the removal or sale of historic shipwreck artefacts outside the country without a permit.

Under Commonwealth and State legislation, Protected Zones (no entry without a permit) may be declared for the most sensitive archaeologically significant and fragile sites throughout Australia. Of the approximately 5,000 protected shipwrecks in Australia there are thirteen Commonwealth Protected Zones and nine State Protected Zones – 22 in total, or 0.3% of sites. The locations of Protected Zones are marked on Admiralty charts and typically cover a 500 metre radius from the centre of the site. Six of the Protected Zones are currently accessible by divers with a permit issued by the state agency: *Zanoni* (South Australia); *William Salthouse* (Victoria); *Hurricane* (Victoria); SS *Lady Darling* (New South Wales); SS *Yongala* (Queensland); and HMAS *Warrnambool* (Queensland).

In August 2004 Heritage Victoria conducted a feasibility study and forum to assess the benefits of opening up some Protected Zones to public access by recreational divers. Permanent moorings have been placed to control damage

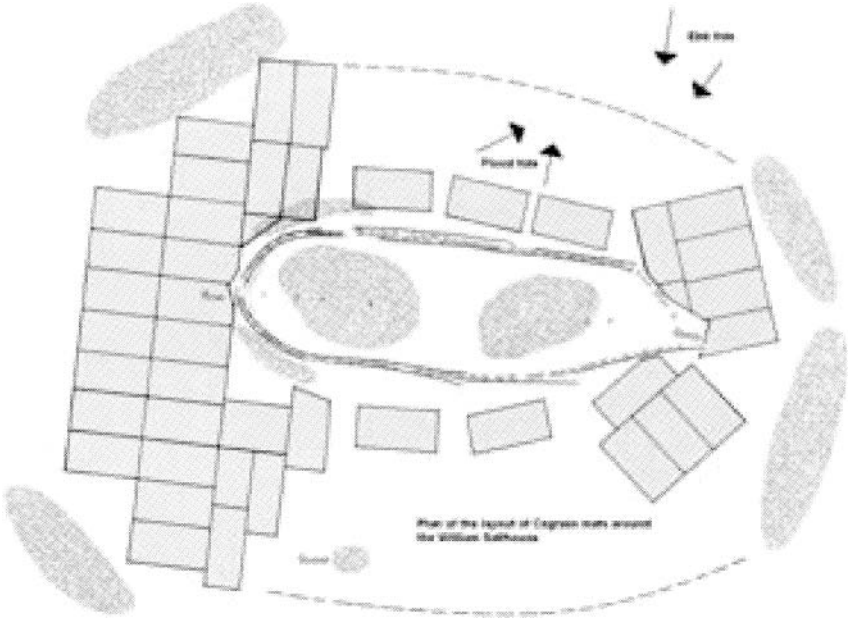

Figure 11.1. Layout of artificial Cegrass™ mats used to protect the *William Salthouse* (1841) *in-situ* (photo courtesy of the Maritime Heritage Unit, Heritage Victoria).

caused by anchoring dive charter boats and to promote safe and sustainable access to the Protected Zone wrecks of the SS *Yongala* and SS *Lady Darling*. In South Australia the well preserved wreck of the composite-built barque *Zanoni* (1867) was reported in 1983, and a Protected Zone was declared due to the site's fragility and the threat of anchor damage from anglers. As a site conservation measure a barge was sunk 1 nautical mile south of the *Zanoni* in 1984 to address community concerns about loss of a popular fishing spot and limit illegal anchoring over the wreck.

Physical site stabilisation to counter natural forces of sand erosion has been successfully undertaken on the wrecks of the *James Matthews* (Western Australia) using plastic road barriers, the *William Salthouse* in Victoria (see Figures 11.1 and 11.2) using artificial seagrass (Harvey, 1996) as well as the *Solway* (South Australia) and the *Sydney Cove* (Tasmania) using sand bags.

South Australia, Norfolk Island and Western Australia have used *in-situ* cathodic protection on shipwreck sites and metal artefacts such as cannon and anchors, while Victoria, Western Australia, South Australia, NSW and Queensland have undertaken pilot corrosion studies on iron and steam shipwrecks (see MacLeod, 1989, 1993, 1998). The Western Australian Maritime Museum, in particular, is renowned for its conservation expertise in pre-disturbance chemical and biological site environment surveying, maritime archaeological artefact conservation and metals corrosion. Heritage Victoria and the Queensland Museum also support professional conservation staff and facilities for maritime archaeological conservation. *In situ* site stabilisation with an estimated cost of AUS$5 million is currently proposed to support the sagging, but still intact deck of the wreck of the internationally significant twin turret breastwork monitor HMVS *Cerberus* in Victoria.

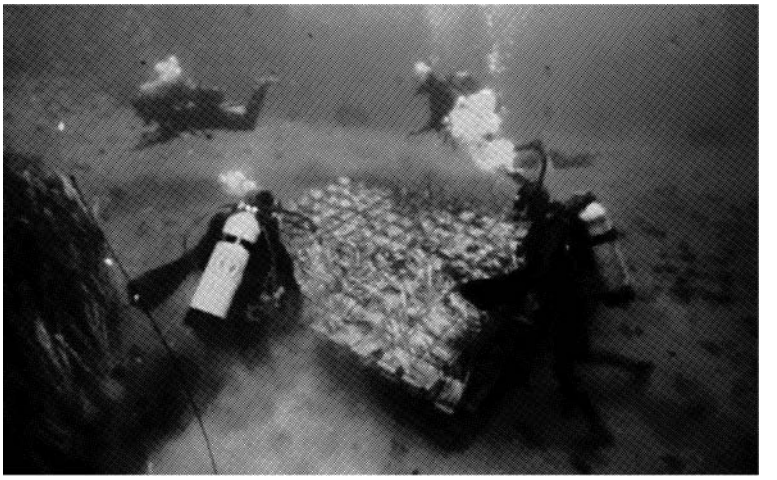

Figure 11.2. Artificial seagrass in place on the *William Salthouse* (photo courtesy of the Maritime Heritage Unit, Heritage Victoria).

Rescue archaeology has been undertaken in Victoria (SS *City of Launceston*, PS *Clonmel*) and Western Australia (Dutch wrecks, *Rapid*, *Tryal*) where sites are threatened by human or natural impact – namely removal of high value portable artefacts such as bottles and coins by divers or sand erosion. In the case of the whaling vessel *Day Dawn* the entire wreck was physically relocated in 1976 as a result of the expansion of a Naval base at Careening Bay, Western Australia (McCarthy, 1979). In 1991 the wooden hull was again lifted and relocated one kilometre south from its original position under the direction of the Western Australian Maritime Museum with assistance from the Royal Australian Navy (Kimpton and Henderson, 1991). Maritime archaeology students studying at Curtin University have since carried out further studies on the site (Moran, 1997; Thomson, 1997; Williams, 1997).

Enforcement is an area not usually seen to be the province of archaeologists, though it is certainly within the ambit of heritage managers. As well as Heritage Inspectors the Federal Government and most State and Territory governments appoint delegated Historic Shipwreck Inspectors, who are usually experienced Fisheries and Police officers trained in enforcement and Commonwealth and State heritage legislation. In a first for Australia, Heritage Victoria recently obtained statutory authority to issue Penalty Infringement Notices (PINS or "on the spot fines" typically issued for traffic and fisheries offences) for offences such as entering, anchoring, and diving in Protected Zones without a permit. The use of PINS avoids expensive and time-consuming court actions for offences (and time and paperwork for the enforcement officer), with the possibility of court action remaining for serious offences.

High costs make court prosecutions infrequent, though a small number of successful prosecutions involving Protected Zone offences have occurred in South Australia, Victoria and Queensland. Publicizing successful prosecutions has the beneficial effect of discouraging other potential offenders, and the media is notified of all successful prosecutions. Only South Australia, Queensland and Victoria have prosecuted shipwreck offences in recent years for activities ranging from breaking permit conditions (penetrating the SS *Yongala* shipwreck) to anchoring and entering a Protected Zone (*Zanoni* and SS *City of Launceston*).

New South Wales has a "Wreck Spotters Program" whereby individuals in regions with an awareness of shipwreck site locations monitor sites and report illegal activity or site developments to the NSW Heritage Office. Most other states have informal arrangements with known and trusted individuals who live in regions or in proximity to shipwreck sites. This has not always worked – the museum-appointed caretaker of the remote VOC shipwreck *Zuytdorp* in Western Australia was found to be the main culprit in the theft of silver coins from the site (Playford, 1996:179).

Inter-governmental relationships are also essential to integrate maritime heritage sites within the government planning and infrastructure environment to put coherent management procedures in place and avoid unnecessary duplication of government resources where there are overlapping

responsibilities. Formal Memorandums of Understanding have been negotiated between the NSW Heritage Office and the NSW Marine Parks Authority (Nutley, 2003c), and Heritage Victoria and Parks Victoria. The Memorandums have resulted in stronger working relationships and information sharing, as well as increasing the level of protection and coordinated management for cultural heritage in these areas.

Conservation Management Plans (CMPs) are standard practice for guiding the protection of shipwrecks and heritage sites generally, and in Australia are based on the Burra Charter (Australia ICOMOS 1999). Most Protected Zones and other threatened sites have had CMPs prepared. Commonly, managers assess the existing fabric (physical evidence), significance, threats, and stakeholders' interests to formulate a plan for sustainable site use and its future protection. CMPs are fundamental to guide stabilisation works, monitoring programs, research, excavation, conservation works, public access, interpretation and management recommendations.

One of the more recent challenges for Australia has been to legislate to protect submerged aircraft crash sites (McCarthy, 2004c). Western Australia has gazetted a special group declaration for the Broome World War II flying boat wrecks (following advice that "flying boats" could not be registered as historic shipwrecks). The Victorian *Heritage Act* protects submerged aircraft as archaeological sites (if they are 50 years or older. Both the Victorian *Heritage Act* 1995 and NSW *Heritage Act* 1977 protect archaeological aircraft sites under their 50-year blanket provision. The Northern Territory has one aircraft site protected under its *Heritage Conservation Act* 1991 and this Act is currently under review and is likely to be amended in the near future. One proposal raised aims to protect all aircraft crash sites associated with World War II (on land or submerged) by serial place listing, allowing objects to be protected through "blanket" or presumptive registration.

It is important that the results of research and fieldwork, including archaeological excavation, are communicated to the public. "Connecting" the public with maritime heritage has a strong educational and interpretive focus. Practitioners aim to raise awareness of legislation, interpret site significance in innovative and attractive ways and promote cultural heritage tourism as a long-term, sustainable social and economic benefit. Although divers are an important target group the support of an informed wider community is vital to protect maritime heritage sites. Collaboration between agencies and government, academic, industry, community and individuals is a notable feature across the board of Australia's maritime heritage, which borne of community lobbying and volunteer activities has maintained a strong public access and interpretive focus.

Practitioners now contribute to teaching aspects of heritage management to many Australian maritime archaeology tertiary students. This assists universities and graduates to meet industry needs because an awareness of heritage management benefits both students and agencies as potential employees and employers. This has included agencies supporting the teaching of maritime archaeology field-schools, for which a return benefit is the detailed recording of

sites. These have taken place in Tasmania (Bruny Island and Lagoon Bay whaling sites), Western Australia (Abrolhos Islands, Albany, Cockburn Sound), Queensland (Magnetic Island), South Australia (whaling sites, Port Victoria/Wardang Island) and Victoria (Bellarine Peninsula sites). Agencies have also supported archaeology, conservation, chemistry, history and museum students who have researched maritime heritage artefact collections and data for Honours, Masters and Doctoral theses.

Individuals and groups also make significant contributions. A recent innovative Tasmanian example has been the successful location, survey and recovery of diagnostic artefacts of the SS *Tasman* (1883) at a depth of 70 metres by technical divers in a joint effort partly funded by a Federal government grant via the Tasmanian Parks and Wildlife Service (Nash, 2002b). Although the divers were highly trained (though not professional archaeologists) they operated under professional archaeological supervision. Volunteer assistance and community involvement in maritime heritage by individuals or via the avocational maritime archaeology associations is recognised as fundamental to maritime heritage programs. The adoption by the Australasian Institute for Maritime Archaeology and most of the state agencies of formalised training using AIMA/NAS courses ensures quality education and is contributing to the continuation of the volunteer tradition in maritime heritage (see Chapter 13).

Both rewards and awards have been given to members of the community for reporting sites, and for contributions to maritime heritage. Financial rewards are still provided for in the legislation but are rarely given as the perception of shipwrecks as a source of monetary value is not encouraged. Other forms of awards are certificates from Ministers and replica objects, such as a ship's bell for the discoverers of the *Zanoni* site in South Australia. The Jack Loney Award is presented by the Victorian Government's Historic Shipwrecks Advisory

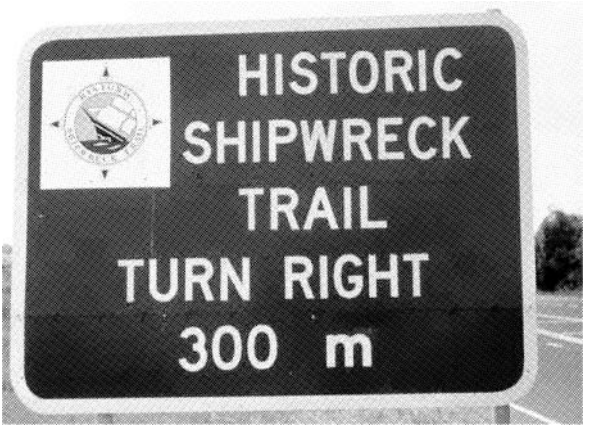

Figure 11.3 Land-based trails have proven successful in interpreting maritime heritage to the wider community (photo courtesy of the Maritime Heritage Unit, Heritage Victoria).

Committee to individuals who have contributed significantly to the protection and promotion of Victoria's maritime heritage, recognising the inspiration provided by the late Jack Loney, Australia's best known shipwreck author and storyteller.

The interpretation of shipwreck sites and maritime heritage is dealt with elsewhere in this volume (see Chapters 12 and 13), suffice to say that approaches such as portable touring exhibitions, publications (including the innovative waterproof trail booklets used by South Australia) as well as underwater and land-based shipwreck heritage trails have proven popular and effective means of interpreting maritime heritage to both the diving and non-diving public (Strachan 1995; Philippou and Staniforth, 2003).

Australians are among the world's highest users of personal computers and all government agencies and museums maintain maritime heritage websites. Examples of recent innovative content on the NSW Heritage Office and Queensland Museum websites include virtual dives and underwater wreck site panoramas, providing an exciting diver's perspective to the non-diving public and schoolchildren. Another worthy initiative by the NSW Heritage Office is its provision of curriculum-based primary and secondary school lesson content on-line, with emphasis on utilising the various search functions of the State's shipwreck database.

11.6. FUTURE CHALLENGES

This chapter has not expounded upon the frustrations and failures that certainly have been encountered in the development of Australia's maritime heritage management. Instead it has attempted to summarise some of the management practices recognised as successful and innovative. Australia's future maritime heritage site managers will continue to face new challenges and will need to adopt innovative approaches in these times of increasing development pressure on coastal and foreshore sites, increased access to deep "untouched" wrecks and decreasing heritage funding.

At the time of writing Australia's much-needed National Maritime Heritage Strategy has not been completed and future ratification of the UNESCO *Convention on the Protection of the Underwater Cultural Heritage* will require revisiting Commonwealth and State legislation to ensure consistency. The issues involved in matching different databases for the creation of a truly national artefact database for access by researchers and the public will be yet another information technology challenge. Technological advances will have implications for site management, particularly in the area of deep diving and remote sensing as high-tech equipment becomes cheaper and more accessible.

Values and notions of heritage will also continue to develop. Recent thematic research in the area of abandoned shipwrecks, maritime/riverine infrastructure and maritime/riverine landscapes, and a diminishing heritage resource has already challenged planners and managers to look beyond the boundaries of the high tide mark or state borders to adopt a more holistic view.

Chapter 12

Maritime Museums and Maritime Archaeological Exhibitions

Kieran Hosty

12.1. MARITIME MUSEUMS IN AUSTRALIA

Maritime museums throughout the world have arisen in response to differing social, cultural, economic and political factors. As a result, their individual histories and the objectives to which they subscribe are not uniform. Unlike the major maritime nations of Europe, Australia has been slow to recognise the importance of its maritime heritage, tending to search for a cultural identity associated with the conquest of the bushland interior rather than the sea (Bolton, 1983:42). The establishment of museums specifically oriented to the preservation of maritime cultural material is, therefore, a comparatively recent phenomenon. It has been suggested that ultimately maritime history, maritime archaeology and maritime museums all seek to interpret and "present" the way in which people interacted with the sea – from past times to the present day (Staniforth and Hyde, 2001:294, 308).

The "museum" has been defined by the International Council of Museums (ICOM) as "a non-profit making permanent institution in the service of society and of its development, and open to the public, which acquires, conserves, researches, communicates and exhibits, for purposes of study, education and enjoyment, material evidence of man (sic) and his (sic) environment" (Hein, 2000:2). The United Nations Educational, Scientific and Cultural Organisation (UNESCO) has identified six very similar functions of museums and interpretation centers – they include collection, identification, recording, preservation and exhibition of cultural material and education of the public in regards to this material (Conaty, 1996). Museums are some of Australia's oldest cultural institutions with the Australia Museum in College

Street, Sydney (NSW) being established in 1827 and the South Australian Museum in Adelaide being able to trace its origins back to the formation of the South Australian Literary Association in August 1834.

The principle, and most traditionally recognised, key function of a "history" museum is the collection of items that are deemed to be of historical significance. Following the collection of the material, object or artefact, the second traditional key function of history museums has tended to be preservation of the artefacts in their collection, followed by the functions of research, exhibition and education. In the last twenty years, however, there has been a gradual change in the priority of these functions. Museums, especially those museums established from the late 1970s onwards that have moved away from primarily collecting and researching material to exhibition development and education (Hein, 2000:44).

Although younger than the more traditional ethnographic, anthropological and natural history museums, maritime museums in Australia also have a respectable history. Probably the oldest nautical collection in Australia belongs to the South Australian Maritime Museum (SAMM) in Port Adelaide. Although SAMM was only established in 1986, it inherited the maritime collection of the Port Adelaide Institute that was established in 1872 by South Australian sailors and international seafarers as a home for their maritime-related artifacts, treasures and curios. Many other maritime museums have been established in Australia, most in the last fifty years. According to the Australian Museums On-Line Database (AMOL) there are now over 45 museums in Australia, which have specialists, have specialist collections in or have specialist exhibitions on maritime history or maritime archaeology.

Most of these maritime museums are privately run or community-based and receive very little government funding or resources. There are, however, three large Federal or state government-funded maritime museums in New South Wales, South Australia and Western Australia, which are primarily focussed on maritime history and/or maritime archaeology. There are a further two state government-funded museums in Queensland and the Northern Territory which have specialist curators, core exhibition areas and large collections devoted to maritime history/archaeology. It is the intention of this chapter to consider each of the three large publicly-funded museums that actively exhibit maritime archaeological material in Australia.

12.2. THE AUSTRALIAN NATIONAL MARITIME MUSEUM

In 1984 the Commonwealth and New South Wales Governments jointly announced that the Australian National Maritime Museum (ANMM) would be constructed as part of the proposed Darling Harbour Redevelopment Scheme in Sydney. The objective of the new museum was to become Australia's prime cultural resource for increasing and communicating knowledge, appreciation and enjoyment of Australia's past and continuing relationships with its waterways and the sea. Collecting and exhibition development centered around

five display themes – *Discovery*, *Passengers*, *Commerce*, *Leisure* and *Navy*, with another theme (*USA Gallery*) added when the United States of America funded a gallery as its gift to Australia for the 1988 Bicentennial celebrations.

Unlike other government-funded museums in Australia, such as the Western Australian Maritime Museum (WAMM) and the Museum of Tropical Queensland (MTQ), the ANMM does not have a specific gallery or displays dedicated to maritime archaeology. Instead the collection is dispersed throughout the museum, providing archaeological context to areas as diverse as Immigration, Ship Technology and Navigation. This policy is reflective of the museum's holistic approach to maritime history and its attempt to combine its social history view of maritime culture with the more traditional technological maritime museum approach.

When the ANMM opened at Darling Harbour on 29 November 1991, the *Commonwealth Historic Shipwrecks Act 1976* had been in operation for over 15 years. Over 200 shipwrecks had been declared historic under state and Federal legislation and maritime archaeological units had been established in all Australian states. The museum's enabling legislation was the *Australian National Maritime Museum Act 1990* and this included among the museum's functions, the powers "to conduct, arrange for and assist research into matters relating to Australian maritime history" and "to recover, or to arrange for or assist in the recovery of, maritime historical material from the Australian marine environment". Because of these clauses within its Act and its relatively high profile as a national museum, the ANMM was always expected to play some role in maritime archaeology in Australia.

Shortly before the official opening of the ANMM the Museum's Council implemented a maritime archaeological program and appointed Mark Staniforth as the first Curator of Maritime Archaeology. This development placed on an official basis a program that had actually been operating since 1988 (Staniforth, 1990). Assisting the Curator of Maritime Archaeology with the archaeological program were two materials conservators and another curator. None of these positions were dedicated full-time to maritime archaeology, however, and in most cases the day-to-day running of the museum with its emphasis on exhibition development and the acquisition of non-archaeological material has taken precedence over the maritime archaeology program.

Guiding the work of the maritime archaeology program since 1991 is the ANMM's *Maritime Archaeology Policy*, which outlines the role of the program, legislative and ethical requirements, the museum's archaeological acquisition policy, and the composition and training of the scientific diving team (Hosty, 2002). The policy ensures that the ANMM complies with the provisions of national and state legislation for the protection of underwater cultural heritage and also provides accurate advice to the other museums, government departments and individuals. As a result staff needed to be familiar with the relevant international conventions and guidelines as well as other national and state legislation. As part of the advice and referral process, museum staff have also served as members of the Heritage Office of New South Wales's Maritime

Archaeology Advisory Panel (MAAP), and as the Commonwealth government's representative on the AIMA council.

As there were already State-run maritime archaeological programs operating throughout Australia the role of the ANMM was essentially seen as a non-initiating one. The Museum did not intend to excavate wrecks and return excavated material for display. Rather, it would actively assist the Federal government, the delegated State authorities and overseas government agencies by providing advice and assistance to individual marine archaeological programs. Since the program commenced in May 1991, the museum has been actively engaged in a number of projects throughout Australia and overseas ensuring that the ANMM really is a national and international organization. In Australia these projects have included assisting with surveys and excavations on the HMS *Sirius* at Norfolk Island, HMS *Pandora* in northern Queensland, the *Sydney Cove* and *Litherland* in Tasmanian waters, and other shipwrecks in Victoria and New South Wales.

Subtle changes to the policy in 1995 saw the ANMM become more proactive in providing expertise in underwater cultural heritage to countries in the Pacific Ocean region such as Tahiti, Fiji and Tonga (Hundley and Hosty, 1998, 2000). A comprehensive project has been undertaken by the ANMM in conjunction with the Museum of Tahiti, to study the 1855 wreck of the American barque *Julia Ann* at the Society Islands. This work positively identified the wreck site and recovered a small number of artefacts that were subsequently displayed in an exhibition at the Museum's USA Gallery (Hundley, 1996, 2001; Hundley and Bassett, 1997). Since 1999 the ANMM has also been involved with a venture to locate and positively identify the remains of Captain James Cook's vessel *Endeavour*, believed to be among 13 vessels scuttled at Newport, Rhode Island, during the American War of Independence (Bassett et al., 1999a; Mellefont, 1999; Abbass, 2001; Hosty and Hundley, 2001). At the time of writing the positive identification of the actual wreck site of the *Endeavour* remains unresolved.

As part of its public programs the ANMM regularly facilitates talks and symposiums on a wide range of maritime topics, including underwater archaeology. The Museum has hosted the AIMA conference in 1988, 1992 and 1998, as well as individual lectures or lecture series to coincide with major travelling exhibitions of shipwreck material. Adult education programs have also been developed with the WEA (Workers' Education Authority), the Australian National Maritime Museum Members' Program as well as the University of Sydney. These programs have included lectures, symposiums and workshops, and in the case of the University of Sydney, work experience opportunities in material culture studies, maritime archaeology and cultural resource management. One of the most successful developments in the area of education has been the design and implementation of "hands on" maritime archaeology workshops for high school students participating in the New South Wales Board of Studies preliminary course in Ancient History titled *History, Archaeology and Science: Investigating the Past*. A similar program for slightly

younger students uses part of a reconstructed underwater excavation to teach some of the principles of maritime archaeology (Hosty, 1995a)

12.3. WESTERN AUSTRALIAN MARITIME MUSEUM

The Western Australian Maritime Museum (WAMM) is one of the five institutions that make up the Western Australian Museum, a State Government-funded statutory authority. Originally established in 1891 as the Perth Museum, the Western Australian Museum initially collected and researched in the areas of geology, ethnology, and biology. In 1959 its botanical collections were transferred to the Western Australian Herbarium, with the museum continuing its focus on earth sciences and zoology. In the 1960s and 1970s the role of the WA Museum expanded with responsibility for developing the State's anthropological, maritime archaeological, social and cultural history collections. With collection responsibilities also came the move into shipwreck site management and protection under a succession of legislative initiatives such as the *Museums Act Amendment Act* 1964, the *Australian Netherlands Agreement on Old Dutch Shipwrecks* 1972, the *Western Australian Maritime Archaeology Act* 1973 and the Commonwealth *Historic Shipwrecks Act 1976* (Henderson, 1986:67-78),

The subsequent establishment and development of the Western Australian Maritime Museum was a direct product of the highly successful and influential government-sponsored maritime archaeology program that commenced in Western Australia in the late 1960s and early 1970s. The large accumulation of archaeological material excavated and recovered from the maritime sites not only provided a catalyst for protective legislation of historic shipwrecks but also created the need for a maritime archaeology department, a collection management system, an archaeological repository and a conservation department. Finally, and perhaps most importantly, to establish a dedicated display and exhibition area for the public to view the results of archaeological work and government spending (Stanbury, 1991b).

Unlike the Australian National Maritime Museum, which attempts to interpret maritime archaeology using a series of social history themes, the original Western Australian Maritime Museum (now called the Western Australian Maritime Museum Shipwreck Galleries) was purely a maritime archaeological museum. The specialist curators were primarily focussed on the research and management of underwater cultural heritage rather than the acquisition of non-archaeological material and general marine exhibition displays. Initially Western Australia's first maritime archaeological displays were based at what is now the Fremantle History Museum and Art Gallery, but in 1977 work began on renovating and converting the former Commissariat Store in Fremantle's historic West End into a museum with an emphasis on maritime archaeology. This purpose-built facility opened to the public in September 1979 and since that time the WAMM has concentrated on telling the story of Western Australia's maritime history through its collection of shipwreck

material. At the time of its opening the museum was one of the first in the world specifically oriented to the preservation and display of maritime archaeological material (Green, 1980).

In 2004 the Shipwreck Galleries consisted of four main exhibition spaces. The Entrance Gallery focusses on Australia's first mariners and some of its earliest shipwrecks such as *Rapid, Eglinton, James Matthews* and *Trial*. The North Gallery is used for temporary and traveling exhibitions. The upstairs VOC Gallery displays artifacts recovered from the four Dutch shipwrecks wrecked on the Western Australian coast. The centerpiece of the Museum is the Batavia Gallery displaying the reconstructed remains of part of the stern and port stern quarter of the VOC ship *Batavia* (1629), discovered by sports divers in the early 1960s and excavated by WAMM maritime archaeologists in the 1970s (Green, 1975, 1989). Also on display in the impressive gallery space is a facsimile of a sandstone portico that the *Batavia* was carrying a part of its cargo. The original portico, along with skeletal remains from the massacre, were transferred from the WAMM to the Western Australian Museum - Geraldton, following the recommendations of the State Government appointed Select Committee on Ancient Shipwrecks report into historic shipwrecks in 1994 (Peddle and Shaw, 1997; Pendal, 1994).

Figure 12.1. Shipwreck Galleries of the Western Australian Maritime Museum, Fremantle, WA (photo courtesy of the Department of Maritime Archaeology, WA Maritime Museum).

The museum is a showcase for the work of the Maritime Archaeology Department, which was established in 1971 to register, document, and manage the State's shipwreck heritage through an active program of wreck inspection, survey, excavation, conservation and research (Green, 1978; Henderson, 1978; McCarthy, 1982). It is primarily through this program that maritime archaeological associations and institutions, maritime archaeological units and programs, shipwreck trails and exhibitions were established in other Australian states. The influential role of the Western Australian Maritime Museum was formally recognised in 1994 by the Federal Government, which provided additional funding to the Museum to create the National Centre of Excellence in Maritime Archaeology (Commonwealth Government, 1994). The Centre of Excellence has been involved in the purchase and development of underwater location and recording equipment, research projects in Australia and overseas, and the production of a series of publications (e.g., Green et al., 1998).

Like all museums WAMM was greatly influenced by the museological changes that swept the museum world in the late 1960s. As Stanbury points out (1991b:301) "modern museums are no longer scrap heaps of curios as they tended to be in the 19th century. Specific policies of acquisition, tied to current academic trends and/or particular museum philosophies and objectives are now the norm". As such, WAMM has had to develop and implement policies, ethical and organizational guidelines in the areas of acquisition, collection development, conservation, management, education and display. Partly as a result of the development of these internal frameworks a secondary form of maritime museum in Western Australia, based more upon a thematic social history than a research and management-driven archaeological program, was first identified.

In 2004 the Western Australian Maritime Museum provides exhibitions that interpret maritime history at three main sites in Fremantle, Western Australia. The former Maritime Museum in Cliff Street was renamed the Shipwreck Galleries, and the new Western Australian Maritime Museum is now located at Victoria Quay. Opened to the public in December 2002 the WAMM is a thematically-based maritime history museum covering areas such as exploration, maritime industries, Naval defence, migration and recreation. It is also concerned with the engagement of Western Australians with the Indian Ocean and the immediate coasts of Southeast Asia. The Maritime History Department's collection is distinct from that of the maritime archaeological-based Shipwreck Galleries in that the collection comprises non-archaeological materials (donated by the public) representing individuals, communities and organisations that have contributed to Western Australia's maritime heritage.

12.4. QUEENSLAND MUSEUM

The involvement of the Brisbane-based Queensland Museum with maritime archaeology was a direct result of the discovery of the HMS *Pandora* in 1979, and the subsequent survey and excavation work on the well-preserved

shipwreck site (see Chapter 5). In a similar fashion to other Australian states the discovery brought about the establishment of a Maritime Archaeological Section in 1982 and the involvement of the Museum in the overall management of Queensland's shipwreck resource through the *Historic Shipwrecks Act* 1976. The Museum staff have gone on to undertake historical research, survey and management of shipwreck sites along an extensive coastline, complicated by the designation of a large section of offshore waters as a World Heritage Area under a separate management agency – the Greater Barrier Reef Marine Park Authority.

However, unlike the Western Australian experience the Queensland Museum did not become involved in the actual excavation of a broad range of sites. With the exception of some rescue work on the *Foam* shipwreck (Beck, 1999) the collection of maritime archaeological material has been almost entirely concentrated on the *Pandora* site. This came about because of the early recognition of the great historical and archaeological significance of the shipwreck, and the need to allocate considerable resources to access the remote and difficult site. The generation of funding and large-scale support for the "*Pandora* Project" in northern Queensland eventually resulted in the relocation of the *Pandora* collection and some staff to the Museum of Tropical Queensland (MTQ) in Townsville.

The MTQ is a branch of the state-funded Queensland Museum and had been opened in 1987. The collection areas cover the pure and applied sciences (particularly marine biology and paleontology), natural environment, ethnography and history. Although the MTQ is not a dedicated maritime museum the $17.5 million major redevelopment of the facility during the late 1990s was largely due to public and political interest in the *Pandora* project. Of the new Museum's five galleries, two are currently dedicated to the material from the *Pandora* and a smaller collection of items from the *Bounty* site at Pitcairn Island. The Great Gallery located near the Museum entrance has a full-scale reconstruction of the *Pandora's* bow section and a detailed plan of the frigate's gun deck woven into the gallery carpet. The Pandora Gallery is the feature gallery of the Museum with its account of the mutiny on HMAV *Bounty*, the voyage of HMS *Pandora* and its subsequent loss, discovery and partial recovery. The gallery features a wide range of material excavated from the wreck and is particularly concerned with the presentation of the archaeology of the site and the subsequent conservation of artefacts.

Unfortunately, despite the best intentions of all those concerned, the dreams of a new era for maritime archaeology in Queensland – similar to those achieved in Western Australia with the opening of the Western Australian Maritime Museum in 1979 – have not been achieved. Much of the funding for maritime archaeological staff and conservation work has come out of the $2,500,000 raised by the Pandora Foundation and these funds are finite. Successive cuts in State and Commonwealth Government funding to maritime archaeology in particular, and to museums in general, in Queensland have also affected operations. The necessary concentration on the conservation, registration and display of the *Pandora* collection has meant that fieldwork on

other sites is now limited, and has been concentrated on supporting dive tourism operations at the nearby *Yongala* shipwreck site.

12.5. MARITIME ARCHAEOLOGICAL COLLECTIONS

Differing museum policies towards the acquisition of objects from underwater archaeological sites have caused conflicts and confusion among museum curators around the world. Of particular concern has been the growth in artefact material from commercially salvaged sites, whether legally or illegally obtained, and the ethics of displaying or purchasing such material (Johnston, 1992, 1993). In September 1993 the International Congress of Maritime Museums (ICMM) adopted standards for the exploration of underwater cultural sites and the acquisition, preservation and exhibition of artefacts recovered from shipwrecks and other sites. Of particular note is the resolution that ICCM members should "not knowingly acquire or exhibit artefacts which have been stolen, illegally exported from their country of origin, illegally salvaged or removed from commercially exploited archaeological or historic sites".

Museums, including those with a maritime focus, traditionally acquire objects by purchase or donation, build up reference collections, and develop exhibitions based on those collections. Yet maritime museums can also be an important avenue for presenting the results of maritime historical and archaeological research through display and publications. However, with some notable exceptions maritime museums are reluctant to become directly involved with maritime archaeological excavation, which is seen as expensive and time-consuming for "limited results". Maritime archaeological collections are frequently perceived as large, unwieldy and containing a lot of material that may be regarded as "undisplayable" (Staniforth and Hyde, 2001: 305).

A case in point is the Australian National Maritime Museum, which actually only has a very small amount of maritime archaeological in its own collection. This includes some items from the VOC Dutch shipwrecks acquired by the Commonwealth through the ANCODS agreement, and a collection of material recovered in the mid-1960s from the stranding site of James Cook's *Endeavour* such as cannon, iron and stone ballast and gun carriage remains. In 1995, at the request of the New South Wales state government, the Museum did accept the donation of a large collection of material, which had been salvaged from the 1857 wreck of the immigrant ship *Dunbar* and subsequently sold, under permit, at auction. The ANMM does obtain archaeological material for display in the various Museum galleries, but only under specific short-term loan agreements. Even then the material must have been legally obtained and have been declared and registered with the appropriate state authority. Such agreements have enabled material from the HMS *Sirius*, *Rapid*, *Loch Ard*, *City of Edinburgh* and *Dunbar* to be displayed.

Because of the possible illegal trade in maritime archaeological material that has been protected under Australian legislation, the museum has developed, through its *Maritime Archaeology Policy*, a set of guidelines to

ensure it complies with all ethical practices and legislation. These procedures have been adopted from recommendations, policies and guidelines originally developed by ICOMOS, ICOM and the ICMM in an effort to curb the destruction of underwater cultural heritage sites and the trade in maritime archaeological material. In principle the museum has a policy of not purchasing any maritime archaeological material from Australian sites protected under the *Historic Shipwrecks Act 1976* through the blanket declaration provisions. If shipwreck material is acquired through other collections (such as the South Australian Tillbrook Collection), or if it is offered up for donation the ANMM will make appropriate arrangements to repatriate the material to the delegated state authorities.

In the case of overseas material, such as in the *Mary Rose* Exhibition in 1995, the *Vasa* Exhibition in 2001 or the Brunei Shipwreck Exhibition in 2003, the material must have been obtained in accordance with the International Congress of Maritime Museums recommendations of 1990. These recommendations stipulate that the material must not have come from commercially salvaged archaeological sites (excavation for profit). The material must have been obtained legally and excavated according to archaeological principles. The integrity of the collection must remain intact: that is the material from the collection cannot be sold and it must have been exported from its country of origin and imported into Australia using correct government protocols (Hosty, 2002).

12.6. MARITIME ARCHAEOLOGICAL EXHIBITIONS

Museum visitation numbers are fast becoming, in these days of economic rationalism, the way in which the success of museums is measured. The ability of a museum to attract the crowds ensures continued funding for research, design, conservation and acquisition of museum display material. High visitor numbers increase the prestige of a museum and ensure the more lucrative sponsorship offers. With so many other amusement and art venues to compete against, large museums are constantly pressured by respective government departments, museum boards, directors and visitors to create or obtain so-called "Blockbuster" exhibits which will ensure good visitation rates and financial viability (Hosty, 1995b:33).

The first major shipwreck exhibition to travel to Australian venues was initiated and funded by the Australian Bicentennial Authority as one of a number of activities to commemorate the European history of Australia. Titled *Shipwreck – Discoveries from our Earliest Shipwrecks 1622-1797*, the exhibition was curated by the Museum of Victoria with assistance from the Western Australian Maritime Museum and the Queensland Museum, as holders of the major maritime archaeological collections (Hogarth, 2000). Concentrating on the wrecks of the *Trial*, the Dutch VOC vessels, HMS *Sirius*, HMS *Pandora* and the *Sydney Cove*, the exhibition toured Australia during 1988-1989. The exhibition presented some of the more spectacular items associated with these

sites, such as the "Great Cameo" from the *Batavia* disaster and the restored surgeon's watch from the *Pandora*. However, the exclusion of the colonial period shipwreck sites such as the *James Matthews*, *Willliam Salthouse* and *Eglinton* was a missed opportunity to present some of the more historically relevant Australian material.

With the opening of the Australian National Maritime Museum came the opportunity to develop or tour exhibitions on some major international shipwreck projects for an Australian audience. *Mary Rose: Life and Death on Henry VIII's Lost Warship*, which opened at the Museum in 1994, was the first international shipwreck exhibition to come to Australia (Mellefont, 1994). Based on the discovery, excavation and conservation of the Tudor warship lost in 1545, the exhibition included over 250 objects from the wreck, with additional introductory material provided by the ANMM. In 1996, the Museum, reacting to the controversy surrounding the deep-water salvage and exhibition of material from the wreck of the *Titanic,* developed an interactive display that told the story of the wreck and its modern day salvage without the direct use of archaeological material (Hosty, 1995b). In a major joint exhibition by the ANMM and the Vasa Museum at Stockholm, archaeological material from the 1628 wreck of the Swedish warship *Vasa*, and supporting objects from local collections, toured Australian venues during 2001-2002 (Matz, 2001; Hosty, 2001). Most recently, in 2003 a "buy-in" exhibition of artefacts (mostly Chinese porcelain) from a 500 year-old wreck off Brunei in Southeast Asia, has been displayed at the ANMM (Richards, D. 2003).

Despite the existence of extensive maritime archaeological material collections in Australia there have been few large-scale travelling exhibitions developed by museums. Based on its extensive work with the 1791 HMS *Pandora* site, the Queensland Museum developed a display on the wreck titled *Pandora – Piecing Together the Puzzle.* Travelling nationwide during 1995-1997 the exhibition stressed the *Pandora's* remarkable state of preservation and the ability of archaeologists, through careful recording, to assign ownership of certain artefacts to individual crew members. In 1996 a travelling exhibition on the 1797 *Sydney Cove* shipwreck was developed by the Queen Victoria Museum, Launceston, and subsequently toured Australian venues during 1997-1999. Titled *Cargo for the Colony* the exhibition concentrated on the connections between Australia and India during the earliest years of European colonisation, by examining the archaeology of one of the ships involved in this trade (Nash, 2001: 96).

Some heritage agencies outside the museum system have also developed travelling displays of shipwreck material, usually confined to smaller venues within state boundaries. The Maritime Heritage Unit of Heritage Victoria has been particularly proactive in the development of small travelling exhibitions based on the work of the Unit. The first of these exhibitions entitled *Time and Tide* was a purpose-built travelling display that toured Victoria between 1989 and 1992. This examined the heritage agency's archaeological and cultural resource management work on sites as diverse as the iron steamer *City of*

Figure 12.2. The *Time and Tide* exhibition toured Victoria in the 1990s (photo courtesy of the Maritime Heritage Unit, Heritage Victoria).

Launceston and the wooden international trader *William Salthouse* (Elliget and Breidahl, 1991). Semi-permanent displays have included *Shipwreck Showcase* at the Queenscliff Maritime Museum, and *Clonmel, A Gippsland Discovery* at the Port Albert Maritime Museum (Harvey, 1999). There have also been travelling exhibitions on *Underground Underwater* looking at maritime and historic archaeology, and *Sea Chests Secrets* which examined the archaeological research into the SS *City of Launceston* (Strachan, 2000a).

12.7. CONCLUSIONS

Maritime museums and the exhibition of maritime archaeological material in Australia have not been without its controversies. Although some museums and exhibitions have been very successful in promoting the importance of maritime archaeology and underwater cultural heritage, others have been less so. Sometimes this failure is due to inexperience in interpreting new material, a lack of funding, low staffing levels, or due to overly optimistic predictions in visitor numbers. Despite these problems the exhibition of maritime archaeological material is still one of the best ways of providing the general public with an insight into what is maritime archaeology. It plays an important advocacy role to urge governments to continue to support the work of the various museums and state agencies that are responsible for the management of underwater cultural heritage.

Chapter 13

Cultural Tourism and Diver Education

Corioli Souter

> *...each weekend brought forward yet another mothership pregnant with dozens of crowbar wielding black-suited divers to swarm over and infest a new found wrecksite. Like a plague of locusts there would be nothing left but the eerie silence as the horde returned to digest the spoils of their foraging and prepare for the next onslaught the following weekend* (Robinson, 1977:110).

13.1. INTRODUCTION

Maritime archaeology in Australia began with the discovery of seventeenth century Dutch shipwreck sites along the Western Australian coast by amateur divers. With a limited number of professional maritime archaeologists available, or even in existence at the time, the excavation of the VOC ship *Batavia* (1629) during the early 1970s was undertaken with the help of a large number of volunteers. Following public participation in Museum projects, the Maritime Archaeological Association of Western Australia (MAAWA), Australia's first community-based maritime archaeology interest group was formed. Similar groups were formed in the other states in the 1970s including the Society for Underwater Historical Research (SUHR) in South Australia and the Maritime Archaeological Association of Victoria (MAAV), both of which still operate today.

The public's enthusiasm for shipwrecks both negative and positive was, in fact, an incentive for the creation of management agencies at the State level. There are approximately 7,500 known wrecks in Australia, which has one of the world's most diverse coastlines. These sites are located in a range of

environments including deepwater areas, along the coastal fringe, within enclosed waterways, and on land. Other maritime sites include port-related structures such as jetties, harbours and slipways as well as underwater deposits of cultural material such as those found in association with wharves. Although the assessment and management of this vast resource is delegated to each State government through the administration of the Commonwealth *Historic Shipwrecks Act* 1976 and related State legislation, the actual discovery of new sites tends to be a public undertaking, more often than not, conducted by the diving community.

Partly in response to this, the investigation and management of shipwreck heritage has demanded a strong public focus. State shipwreck research programs, which apply annually for Federal funding, usually require a measurable public product to ensure government support. The distillation of excavation reports into popular publications, the production of pamphlets, maps and other interpretive materials, shipwreck trails, and more recently a strong Internet presence must all be considered in these maritime archaeological funding proposals. More recently, there has been a call for public inclusion in the investigations of Federally protected shipwrecks. This has been facilitated by the introduction of community-based education programs, the Nautical Archaeology Society's (NAS) training program being the most notable.

These activities increase the range of people involved in shipwreck management and provide a sense of public ownership. It is also a step towards decentralising heritage management by involving other agencies, private organisations and individuals (Nutley, 1994:11). Australia has a long history of avocational involvement in maritime archaeology through maritime archaeology associations in each Australian State and other proponents of the discipline identified through outreach programs. Collaboration between professional maritime archaeologists and avocationals is seen as one of the keys to undertaking successful management and research programs for maritime heritage.

13.2. THE PROFESSIONAL VS THE PIRATES

Australia's cultural identity has always been linked to the sea, and the underwater cultural heritage has imbued in divers, to a certain extent, with a sense of collective ownership. However, the legacy of pioneer wreck divers such as Alan Robinson, who challenged the existing shipwrecks legislation in the 1970s over the Dutch VOC ship *Vergulde Draeck*, still echoes within the diving fraternity. Prior to Federal legislation, indefinable wreck salvage laws had fostered a belief that shipwrecks were a resource from which to profit. Similarly the identification of the Dutch East Indiamen, the first sites to be formally investigated, as "bullion wrecks", also proved problematical. Shipwreck sites which included coinage (or specie) as part of the excavated artefact assemblage, invoked visions of treasure and fortune in the popular mind (Lester, 1983:397).

In Western Australia, shipwrecks predating 1900 were automatically protected by the 1964 *Museum Act,* which was later modified in 1973 to the *Maritime Archaeology Act.* This act did not restrict access to a wreck for recreational divers but excluded removal of material from a site (Green, 1990:157). It also included rewards for reporting a site and compensation based on the non-ferrous metal content. The Act was declared invalid in the 1977 Robinson versus WA Museum case concerning the *Vergulde Draeck.* The result of this case and failure of a relatively new, unchallenged legislation did little to encourage public sympathy for government intervention. The Federal *Historic Shipwrecks Act* was declared in 1976 although it was the 1985 blanket declaration amendment that gave the legislation its strength (see Chapter 10). Other states such as Victoria (1980) and South Australia (1980) also developed their own legislation to protect shipwrecks in State waters (Strachan, 1995:26). Such legislation finally started to address the antiquated salvage ethos that had polarized the diving community during the 1970s.

Although the Robinson case sparked the legislative experiment that would result in the *Historic Shipwrecks Act* 1976 it was also an indication of the fervent expectations of some members of the public with regard to the possession of shipwreck sites and material. The issues of public ownership, subsequent souveniring and recognition of discovery were new problems not always encountered in terrestrial archaeological or heritage contexts. It was clear, even at this time, that archaeological investigations occurring in the ocean would have to make some concessions to public pressure. It could be said that public interest and involvement conceived the science that now is maritime archaeology in Australia and therefore cannot be divorced from it. George Bass also reminds us that "it was the amateur, the diver, and not the professional archaeologist who led the way, found sites, pioneered their excavation, and showed the promise of the future" (Bass, 1966:18).

Legislation, although placing a legal and moral obligation on the public not to interfere with shipwrecks, was not intended to educate. Although there are substantial fines and/or imprisonment terms for infringements that provide the deterrent, there is nothing contained within the *Act* that explains why shipwrecks should be protected. As part of the National Amnesty in 1993 under the *Act*, however, clear guidelines for the public were produced (DAAS, 1993). The Amnesty lasted for 12 months and allowed the public to report shipwreck relics in their possession without fear of prosecution. The aim of this amnesty was to document and preserve information about maritime heritage that would have otherwise been lost in the public arena (Strachan, 1995:27). These guidelines stated: "Every shipwreck, regardless of age, should be treated with respect and not damaged or plundered". Similarly the guidelines attempted to engender community ownership of this resource: "Shipwrecks are a vital historical record and, as such, should be preserved intact as part of the nation's heritage". The important role of community groups in the management of shipwrecks was also acknowledged and encouraged.

13.3. SHIPWRECKS AND CULTURAL TOURISM

The recognition of shipwrecks as recreational and educational assets (McCarthy, 1981), was adopted as one of the criteria for the gazetting of a shipwreck under the *Historic Shipwrecks Act* in 1982 (Strachan, 1995:26). Public education through historic shipwreck and maritime heritage trail networks was an outcome of this philosophy and the realization of the concept of the "underwater display case" (McCarthy, 1983:383). The nations first underwater "wreck trail" to promote accessible shipwreck sites at Rottnest Island off Fremantle, Western Australia, was established in 1981 (McCarthy, 1983; Prince, 1987). The Rottnest Island sites, characterized by accessible diving conditions, were representative of a range of vessels of wood, iron and composite construction, lost on the Western Australian coast. Each wreck site was marked with a concrete plinth, which was embedded with a plaque displaying information about the wreck. This was paralleled on land by a similar plaque that explained the history of the wreck event as well as the distance and direction to the site. A pamphlet on the wrecks and their locations along with a display at the Rottnest Museum was also part of the project.

This alternative method of shipwreck display served as an example for the developing notion of cultural tourism, and the "trail" idea has since been adapted by other heritage and environmental agencies. Approximately eight per cent of

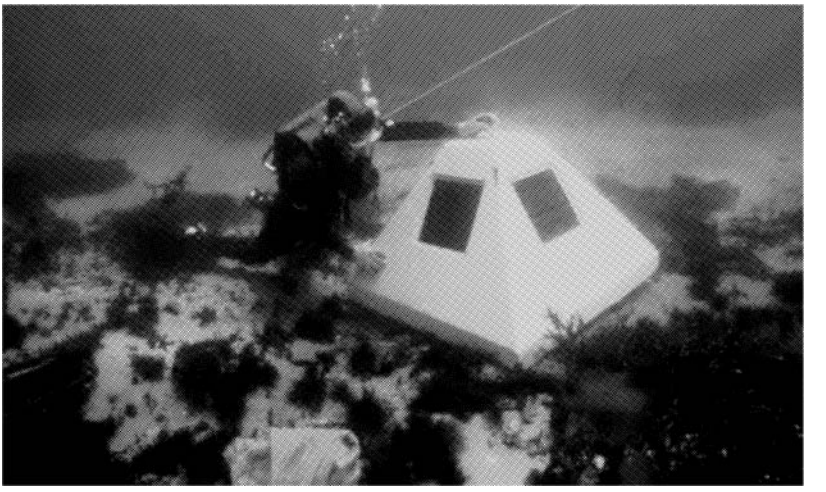

Figure 13.1. Underwater trails for divers using concrete and glass plinths have been used successfully throughout Australia. (photo courtesy of the Maritime Heritage Unit, Heritage Victoria).

Figure 13.2. Maritime Heritage Trail sign in Victoria (photo courtesy of Maritime Heritage Unit, Heritage Victoria).

shipwrecks located in Australia have now been interpreted using shipwreck trails (Smith, 2003:124). Shipwreck or maritime heritage trails are nearly always presented in a regional framework and as such, have usually attracted local community support and sponsorship. Shire councils, dive clubs, local businesses and secondary schools have all contributed to the creation of trails nationwide. In Victoria alone there are now eight shipwreck trails with the largest of these, the South West Historic Shipwreck Trail, covering over fifty shipwrecks and associated maritime sites along more than 300 kilometres of the south coast.

Shipwreck or maritime heritage trails have been developed in various forms - some as underwater plinths, some based on terrestrial signage and others on material published in a variety of media, including the World Wide Web. The *Underwater Shipwreck Discovery Kit* produced by Heritage Victoria in 1991 in collaboration with the diving community is perhaps the most comprehensive example of printed material complementing a wreck trail. Including detailed site plans, artefact drawings, photographs and a thematic historical overview of the wrecks, the kit provided a substitute form of souvenir from the wreck diving experience (Maritime Archaeology Unit, 1992). In South Australia guides for visitors (particularly divers) to Investigator Strait, Wardang Island and the Southern Ocean Shipwreck Trail have been printed in waterproof "plastic" booklets that can be taken on site if required. To accompany these and other print publications the State heritage agency has also developed an extensive web-based guide to its various trails. The Garden Island Ships' Graveyard project near the capital city of Adelaide is perhaps one of the best examples of a

maritime heritage trail that encourages different forms of cultural tourism, in this case kayakers using the Port Adelaide River (Hartell and Richards, 2001).

The development of cultural tourism enterprises utilising shipwrecks and other maritime heritage sites does bring up a number of management issues. Smith (2003) has discussed the vital need for public ownership and community support for any successful trail projects and Strachan (1995) has noted that the post-production "selling" of the tourism product is usually limited in extent. The fragmented and inconsistent development of shipwreck trails across a variety of management jurisdictions has also been critiqued by Phillipou and Staniforth (2003) - particularly the narrow focus of some projects and the relatively low level of interpretation. The linking of the various Australian shipwreck trails on a national basis has also been suggested as one of the goals of the existing Historic Shipwrecks Program.

There has also been recognition that the publicizing of one group of wrecks through shipwreck trail networks, could alleviate pressure on other less well known sites considered too fragile to withstand heavy diver traffic (Hosty, 1987:24). The possibility of increased looting to sites through public promotion has also been considered although this is generally offset by both social and economic benefits (Strachan, 1995:27).

Following on from the national shipwreck amnesty and the development of shipwreck trails, interpretation products have increasingly become a requirement for research that is primarily funded using public money. Heritage agencies in particular have been encouraged to consider the public as a client base and accordingly, started to develop co-operative community programs. The first edition of the *Shipwreck Atlas* produced by the New South Wales Heritage Office in 1992 was the culmination of dedicated research to service a public demand for shipwreck information (Nutley, 1996). This publication included site descriptions and perhaps more importantly, provided clear instructions and charts for locating sites. It was one of the first shipwreck guides to incorporate researched and accurate details, commensurate with practitioner knowledge about shipwreck sites.

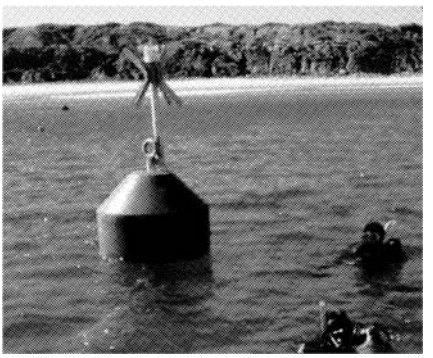

Figure 13.3. Permanent moorings to protect historic shipwreck sites from anchor damage and facilitate safe public access on the *Star of Greece* (1888) in South Australia (photo courtesy of Heritage South Australia).

The economic value of diver tourism to shipwreck sites has previously been discussed in Chapter 10, and some Australian states are now investing considerable funds in projects to scuttle obsolete Naval vessels and other craft as dive locations. The deliberate scuttling of vessels by heritage agencies had been undertaken as early as 1983 with the sinking of the ex-whale chaser *Cheynes III* in Western Australia (Henderson, 1986:126). In an effort to minimise damage from anchoring, a number of high profile shipwrecks sites now have permanent mooring systems in place for dive operators (see Figure 13.3). Preventing the damaging penetration of divers into iron hulled shipwrecks such as the heavily visited SS *Yongala*, has also been successfully addressed by diver education (Jewell, 2004).

New South Wales has continued to adapt to current public needs with subsequent projects by the introduction of community-based wreck surveys. Individuals and/or groups were invited to participate in the systematic collection of historic material and to survey and record wreck sites of their choice. A promotion package was produced with source references and instructions on how to produce such records (Heritage Branch, 1992). The resulting material was submitted to the Department of Planning for collating and editing, and those who participated would receive recognition in the published work that would also contribute to the National Historic Shipwrecks Database. Results from all the community surveys were published as part of the Heritage Office's annual report, with outstanding examples also published in leading dive magazines.

The project was heralded a success in that it effectively satisfied a diver's need for recognition, and increased the range of people involved in shipwreck management. It was also linked with the existing commercial interests of the recreational dive industry and structured as a dive club activity. As the project provided a focus for wreck diving courses as well as attracting new divers it gave retailers such as dive shops a financial reason to be involved, while increasing the depth of awareness of shipwreck heritage among the participants (Nutley, 1994:11).

Underwater cultural heritage managers in all Australian states have developed the concept of outreach through sophisticated community programs and associated literature campaigns. Maritime archaeologists incorporated into larger heritage and planning infrastructures have also been well positioned to gauge and service public needs. The notion of cultural tourism was integral to the development of strategies employed for the management of shipwrecks (see Jeffery, 1990b). In turn, cultural tourism has ensured that shipwreck research continues to be publicly supported and consequently government funded.

13.4. PUBLIC EDUCATION

Although cultural tourism appeals to society's "capitalist ethos" (Nutley, 1987b:30) and reinforces the relevance of shipwreck archaeological research,

education is still an important tool for ensuring continued public awareness. The Nautical Archaeology Society (NAS) program adopted by the Australasian Institute for Maritime Archaeology (AIMA) in 1997 has become an important tool for public education, with a focus on diver training (Moran and Staniforth, 1998). The general philosophies behind the course, to introduce the methods and procedures employed in underwater archaeology, and generate awareness regarding shipwreck preservation were already part of AIMA's Constitution. The success of the program in the UK had been noted for some time so the syllabus was adapted for Australian conditions. A network of experienced maritime archaeologist tutors was established to ensure that the courses retained a high and consistent standard. Courses initially relied on publications such as *NAS Guide to Principles and Practices* (Dean et al., 1992) but have now developed more specific training materials.

Prior to the introduction of the AIMA/NAS program, a variety of public education initiatives were already in place. These included seminars and lectures to dive clubs and other interested groups as well as University extension courses, such as the Maritime Archaeological Survey Techniques Course run by Peter Gesner of the Queensland Museum in conjunction with the University of Queensland. There were also dedicated shipwreck interest courses run through various dive schools, such as the FAUI Wreck Diver Program established by Mike McCarthy in 1984. Maritime archaeology associations in the various states also ran independent training courses for members (Moran and Staniforth, 1998:137). These initiatives, while successful, tended to lack continuity having been arranged on an "as required" basis or when funds and personnel were available to develop the programs. Similarly, they lacked uniformity on a national level. The AIMA/NAS program was the first internationally accredited and, most importantly, on-going system of maritime archaeological avocational training in Australia.

Part 1 of the AIMA/NAS program consists of a two-day workshop which includes at least 8 hours of class work in addition to a practical survey task. The Part 1 course is a general introduction to maritime archaeology and introduces the basic concept of pre-disturbance surveys of shipwreck sites. The course structure includes archaeological principles, archaeological sciences, materials conservation, ship construction, surveying, search techniques, shipwreck position fixing, remote sensing as well as State and Federal legislation. AIMA/NAS Part 2 consists of attendance at a survey day school or lecture series, the equivalent of 2 days attendance at archaeology conferences and the completion of a short project. Part 3 is awarded after the accumulation of 100 contact hours of tuition in six or seven subject areas. The 100 contact hours can be accrued through special field schools of one week or longer duration and/or through a number of weekend workshops. Part 4 is the presentation of an extended portfolio of work on an approved subject/project, including a report to publication standard. The Part 4 graduate must also complete a minimum of 12 weeks total on at least three sites since beginning Part 2.

AIMA/NAS Training has been incorporated into undergraduate and postgraduate programs while still maintaining its public face and emphasis on

community involvement. Flinders University (South Australia), James Cook University (North Queensland) and, more recently, the University of Western Australia hold annual field schools where students may complete Part I-III courses as part of the curriculum. The courses are also being promoted to heritage professionals including terrestrial archaeologists. Here they serve to inform practitioners about methodology employed in underwater contexts.

The establishment of the AIMA/NAS Training program has proved an important tool in ensuring that there is a scheme in which amateurs can be involved and, if we follow the UK example, assist in the recording and preservation of underwater cultural heritage. Remembering that there are thousands of new divers certified annually in Australia, any education program is very much dependent on continuity. The success of Australian maritime archaeological education programs over the last decade is paralleled in the evolution of diver attitudes. Through education about the marine environment, including the importance of underwater cultural heritage, a culture change is strikingly apparent. The pioneer divers who won notoriety through discovery and salvage have been usurped by the modern eco-diver who is, as a rule, more environmentally aware. With this change of ethos, today's diver does not require an artifact taken from a wreck site and displayed on their mantelpiece to gain credibility amongst their peers.

Through the AIMA/NAS program and other training initiatives with similar ideals, practitioners have successfully managed to convince a large segment of the public of the societal value of preserving archaeological material, both in collection and *in situ* (Nutley, 1987b:30). This message is reinforced by the avocational maritime archaeology associations, which are guided by practitioners, but still operate independently of the delegated authorities. Participation in the AIMA/NAS Part 1 training program has in some States also become a prerequisite for the conduct of surveys by amateur associations. The introduction of the AIMA/NAS maritime archaeological training program in Australia was timely in that it has served to renew and strengthen old ties between the heritage agencies and the community. The course serves as a bridge between interested individuals and the amateur groups. Graduates of the AIMA/NAS program infuse such organisations with new blood and bring fresh enthusiasm. This renaissance of the "amateur archaeologist" is important in light of the non-disturbance approach employed by many practitioners. Without big excavations public enthusiasm is hard to sustain. Relations with the public need to be maintained or archaeologists stand to lose funding and political sway and ultimately their relevance (Henderson, 1990a:19).

13.5. MARITIME ARCHAEOLOGY ASSOCIATIONS

A key factor which distinguishes the amateur maritime archaeological associations from other dive clubs interested in wreck sites is the "disciplined diver" approach (Ryan, 1977: 26) to research and surveying, together with the production of full written reports. A byproduct of this approach is that such

organizations set an example to the rest of the community as divers who can actively engage with this resource without compromising it. This was evidenced by statistics that reflected a decrease in the amount of looting occurring on sites after the formation of the Maritime Archaeological Association of Western Australia (MAAWA) (Hosty, 1987:34). Following the success of a part-time introductory course run by Jeremy Green at the Western Australian Museum, MAAWA was formed in 1974. The Association was the source of much of the voluntary labour and expertise used on early Museum projects. The function of the society was to coordinate the involvement of people who were interested in maritime archaeology, to train divers in practical archaeological skills and non-divers in the study of artifacts, and to ensure a systematic and thorough study of maritime archaeological sites (Robinson, 1977:111).

Early fieldwork included investigations on wrecks in the Perth metropolitan region, excavation and cataloguing of the *James Matthews*, excavation of the *Batavia,* maritime and terrestrial investigations of the *Zeewijk, Vergulde Draeck* and *Rapid.* Some MAAWA members also participated in the 1978 Mombassa expedition run in conjunction with the Institute of Nautical Archaeology (INA) to excavate the *Santo Antonio de Tanna.* MAAWA have initiated independent jetty studies, investigations into State-protected sites such as the Swan River wrecks (the Museum currently receives no recurrent funding for this research) and participate in the upkeep of the Rottnest Island shipwreck trails. Some new MAAWA members, introduced to the organization though the AIMA/NAS program, have continued to follow the tradition of earlier members and have completed tertiary qualifications in archaeology. In a time when Federal funds may be redirected to other portfolios, the role of MAAWA is vitally important. Their independent research continues to assist the Department of Maritime Archaeology to identify new project areas.

South Australian divers who had a particular interest in maritime history formed the Society for Underwater Historical Research (SUHR) in 1974. It also stemmed from member involvement in the successful search for the HMS *Investigator* anchor, lost by Matthew Flinders in 1803 in Western Australia. The first project was the site of the old Glenelg Jetty at Holdfast Bay, chosen because of its historical importance and for its convenience for divers to access the site without a need for boats or expensive equipment. One important aspect of the project was that, within its relatively safe confines, the jetty and its surrounds provided an excellent classroom for the development of underwater surveying techniques. The SUHR's discovery of *Loch Vennachar* (1905), lost off Kangaroo Island, was to prove pivotal for the Society, attracting assistance from both the Government and private sectors (Jeffery, 1980). The Society was involved in many other projects including the *Star of Greece* survey, the raising and conservation of the *Loch Vennachar* anchor, the search for and discovery of the wreck of the *Tigress* (Jeffery, 1982) and the survey of wrecks around the Margaret Brock Reef (Drew and Jeffery, 1982).

The SUHR was also instrumental in lobbying for the creation of a South Australian Maritime Museum, the proposal for the South Australian *Historic Shipwrecks Act* to complement existing Commonwealth legislation and for the

creation of a professional maritime archaeological role within the State government. A generational change took place in 1999 with students from the Flinders University maritime archaeology program becoming active members. Many projects from this point onwards have been directed by Flinders students including the Holdfast Bay project (Richards and Lewczak, 2002). However, even with the SUHR as a de facto university maritime archaeology society, the organization has still maintained and promoted public membership.

The Maritime Archaeological Association of Victoria (MAAV) established in 1978, has probably the largest contingent of trained divers who not only pursue independent projects, but have a long and active association with the state heritage agency. MAAV members in conjunction with the state practitioners have participated in the excavation and stabilisation of the *William Salthouse,* the excavation of the Australian-built *Clarence*, survey work on the PS *Clonmel*, SS *Monumental City*, and *Loch Ard.* One of the State's most significant shipwrecks, the SS *City of Launceston* (1865) was discovered and initially surveyed by MAAV members (Arnott, 1987). The MAAV has been actively involved with interstate shipwreck programs such as HMS *Pandora* (Queensland), HMS *Sirius* (Norfolk Island), *Zanoni* (South Australia), *Sydney Cove* (Tasmania) and SS *Xantho* (Western Australia).

The symbiotic relationship that exists between the MAAV and the delegated authority under the *Historic Shipwrecks Act* embodies the same ideologies expressed by the pioneer amateurs of the discipline. This relationship has allowed both professional and non-professional archaeologists to focus on their own areas of expertise. Membership of the MAAV includes a number of professional trades who have been contracted and/or volunteered to run the diving logistics of a number of expeditions on behalf of the Maritime Heritage Unit (Heritage Victoria). Many of the projects may not have been realized had it not been for the contribution of MAAV members. Members of the MAAV have been responsible for the location of many sites in Victoria. In the period when cash rewards were on offer to the discoverers of shipwrecks, many recipients elected to put the money towards capital purchases for the association. One example was the purchase of a magnetometer for MAAV, which continues to contribute to wreck research.

The Maritime Archaeological Association of Tasmania (MAAT) was formed in 1977 following the discovery of the *Sydney Cove*. Initially formed as the Tasmanian Underwater Research Group the organisation was instrumental in the preliminary investigations of the vessel in conjunction with the then National Parks and Wildlife Service (Atherton, 1983). Aside from a number of other shipwreck surveys (Lester, 1984b) the group also surveyed both underwater and terrestrial sites associated with the convict settlements of Port Arthur (Cook, 1983) and Sarah Island. Although the MAAT disbanded in 1989 individual former members have maintained involvement with the maritime archaeology program run by the Tasmanian Parks and Wildlife Service.

The Maritime Archaeological Association of New South Wales (MAANSW), at one time headed by maritime historian John Bach, came into being after a seminar held in 1978 by staff from the Western Australian Museum

and the Commonwealth government. The initial tasks the society undertook included the compilation of a photographic and descriptive register of shipwrecks on the NSW coast, shipwreck surveys including *Ballina* and *Walter Hood* (Green, 1979; Lorimer, 1980). Spearheaded by steam enthusiast John Riley, who later went on to develop the waterline disintegration theory for iron shipwrecks, the group were among the first to archaeologically examine the remains of steamships (Riley, 1988a, 1988b).

The Maritime Archaeological Association of Queensland (MAAQ) still has membership today but its heyday of operation was in the 1980s and 1990s when it was closely linked with the Maritime Archaeology Department of the Queensland Museum. Members participated in the HMS *Pandora* and HMS *Sirius* projects as well as running an independent survey program. Surveys were carried out on sites at Lady Elliot Island, as well as the *Aarhus* and *Scottish Prince* (MAAQ, 1989). Other groups including the Maritime Archaeological Association of Mackay and Maritime Archaeological Association of Far North Queensland were also formed, although these were short lived.

The formation of the Australian (later Australasian) Institute for Maritime Archaeology was in essence, the amalgamation of all these State maritime archaeology associations, who first published collectively in 1979. After the publication of four newsletters under the title of Australian Maritime Archaeology Association, AIMA was conceived in 1981. Perhaps one of the most valuable contributions of these societies was that collectively they ensured the political support for the creation and continuation of State bodies dedicated to the investigation of shipwrecks. The commitment of individuals to the cause of preserving Australian shipwrecks must be commended. The MAAT for one recognized the frustrations of such a task noting that "dealing with government departments and institutions is basically dealing in politics and you must bear in mind that generally, any decisions they make will be politically based" (Green, 1979).

13.6. THE FUTURE

Liability and the costs of insurance as far as diving activities are concerned are real issues for the future of avocational maritime archaeology associations. Presently, a number of these associations are listed as non-diving societies due to perceived risk and liability. Although one may commend the new safety measures introduced through regulated occupational diving protocols, the disadvantages for amateurs trying to operate collectively are of concern. Even non-profit organizations have difficulty protecting their members from litigation should any accident occur, regardless of fault, in this present risk-oriented insurance climate. Some heritage agencies can offer support by covering volunteers under in-house insurance schemes for particular projects but this is merely a stopgap. Such an expedient also compromises the independence of these organizations. As stated at the beginning of this chapter, many of the discoveries and research of Australian maritime heritage continue to be

facilitated by amateurs. It is important that these organizations' autonomy continues.

An interesting irony is that many of the more recent shipwreck discoveries are occurring in deep water off the continental shelf, for example, the Rottnest Island shipwrecks graveyard. These sites are being dived by technical mixed-gas divers as Government agencies are not permitted to such depths under Occupational Diving regulations. A similar situation has occurred in New South Wales where a number of deep-water steamship wrecks are being located and recorded by amateur groups not aligned to any formal organisation (e.g., Spencer, 1992). In Tasmania, the discovery and survey of the wreck of the SS *Tasman* (1883) in 70 metres of water, was successfully carried out by a group of highly experienced avocational divers (Nash, 2002b).

Presently, scuba diver certifying agencies in Australia do not include information about the legislative protection of shipwrecks. One of the main reasons is that the agencies themselves are based in the United States and subsequently the curriculum does not include information pertaining to particular Australian conditions and legislation. The mantra "Take pictures and leave only bubbles" is widely disseminated throughout the industry and non-intrusive practices are taught to minimize the divers' impact on the environment. However, it is ultimately at the discretion of the individual company or scuba diver instructor whether shipwreck legislation is taught.

With the adoption of community-based shipwreck surveys and training programs, it is evident that the public's interest in cultural heritage is further fuelled by direct interaction with the physical remains. Similarly there are certain advantages both political and practical for returning "a degree of control" in heritage management back to the community (Nutley, 1994:11). As a result of outreach and training programs, community attitudes to shipwreck are supportive of the legislation. Through their involvement with the resource the public becomes aware of the need to balance site access and preservation. The presentation of shipwrecks as a part of our cultural heritage is essentially a management issue. It requires the skills of professionals to instruct the public of the value of shipwrecks in an interesting and informative manner. The assistance of the commercial sector aids with the acceptance of these ideas and as previously stated can be mutually beneficial. Public, and in particular diver, education is needed in order to prevent the worst excesses of "wreck bashing", both in Australia and overseas. Although one should not deny the importance of policing and legislating in achieving this, education equates to preservation.

What of diver attitudes today? Unfortunately there will always be a percentage of people who believe whatever comes from the ocean is available for the taking. Most divers, however, see shipwrecks legislation as a protection mechanism for community heritage. The success of amateur involvement in maritime archaeology stems from an individual's passion for the discipline. In the words of A.E. Brock when describing the role of the avocational groups:

> ...to let the problems of time, patience, expense, "spare" energies and lack of deeper knowledge or expertise – the awareness that we are "amateurs", with all the limitations this tag implies, would be to let it all overcome us.

> We would have to abandon the whole concept and ideal of preserving a major part of our heritage. No one wants to do this, for we are all well aware of how quickly this heritage is being dissipated and lost forever for future generations. We are at least trying to be Olympians – and not just in the sense that we do not get paid for what we do (Brock, 1977:115).

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